

2. Notes on the Australian Fossorial Wasps of the Family *Sphegidae*, with Descriptions of new Species. By ROWLAND E. TURNER, F.Z.S.

[Received April 6, 1908.]

(Plate XXVI.\* and Text-figures 105-110.)

The Sphegidae of Australia have attracted very little notice since the time of F. Smith; the only works in which any number of species have been dealt with being Kohl's Monograph of the genus *Spheex* and various papers by Handlirsch on *Bembeex* and the allied groups. In consequence, it has been impossible to get any reliable idea as to the characteristic points which might attract notice as to the peculiarities of Australia in this group. The present paper, although necessarily very incomplete from want of sufficient material, is based upon the large collection formed by the late Gilbert Turner in North Queensland together with smaller additions from other sources. Considering the sandy nature of much of the continent, usually so favourable to fossorial wasps, Australia is rather poor in Sphegidae, and several wide-ranging genera represented in almost every other region seem to be entirely absent. The most notable instances are the genera *Philanthus* and *Oxybelus*, but *Ampulex*, so conspicuous in the Indian and African regions, is also absent. Nor is it likely that the absence of these genera in collections is due to insufficient field-work, for North Queensland is the most likely part of the continent for these wide-ranging genera to occur in, the line of migration having been through New Guinea. Thus I am able to record two species of *Trypoxylon* closely allied to Indian and Malayan forms, no species of the genus having yet been discovered in the southern or western districts. On the contrary, genera peculiar to Australia are not numerous and seem to be poor in species, though probably more exhaustive collecting in Western Australia would add to the number. Most characteristic of the country are *Sericophorus* and the allied genera *Zoyphium* and *Sphodrotes*, also the large *Exeirus*; but the worldwide genus *Pison* is much richer in species in Australia than elsewhere. *Harpactophilus* is apparently a tropical genus, and will probably be found to have its headquarters in New Guinea. The small amount of material available from Central Australia seems to point to the plentiful occurrence of a few wide-ranging species, mostly identical with those of Western Australia.

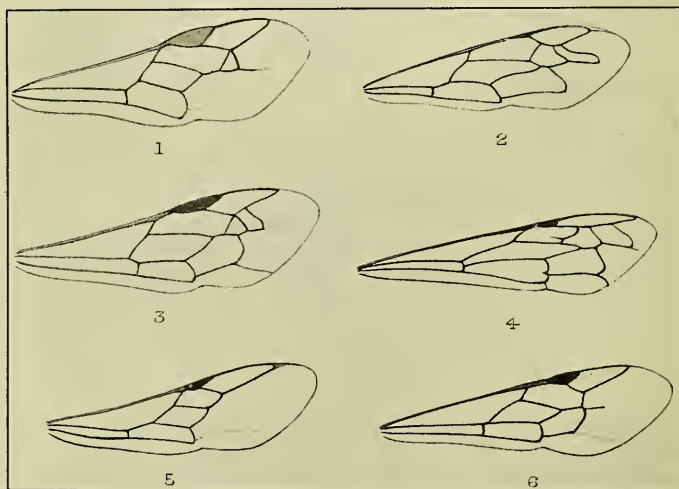
STIGMUS QUEENSLANDENSIS, sp. n.

♀. Clypeus strongly convex, raised in the middle into a broad carina, which is more narrowly continued on the front to the anterior ocellus. Clypeus and vertex almost smooth, front finely

\* For explanation of the Plate see p. 535.

and closely punctured-rugose, slightly concave, with a depressed row of large punctures, bordered within by a carina, along the inner margin of the eyes. Eyes large, reaching the base of the mandibles and slightly convergent towards the vertex, the posterior ocelli rather farther from each other than from the eyes. Antennæ inserted nearer to the eyes than to each other, the flagellum three times as long as the scape. Pronotum very short, much narrower than the head, the anterior margin raised and with prominent angles, a transverse row of large, deep punctures behind it; the propleuræ obliquely striated, the mesopleuræ rugose. Mesonotum and scutellum closely and very finely punctured. The median segment as long as the thorax, vertically

Text-fig. 105.



Neuration of fore wing.

1. *Stigmus queenslandensis*. 2. *Tachysphex pilosulus*. 3. *Zoyphium kohlii*.  
4. *Gorytes icarioides*. 5. *Nitela kurandæ*. 6. *Pison (Parapison) aberrans*.

truncated posteriorly, coarsely transversely striated; a triangular space reaching from the base to the apex bordered by raised carinæ, with two parallel longitudinal carinæ close to the middle reaching from the base to the apex. Abdomen subsessile, not petiolate, smooth and shining, about as long as the thorax and median segment combined. The second cubital cell is very small, triangular, and almost petiolate, the recurrent nervure is received at about one-third from the apex of the first cubital cell, which is longer than is usual in the genus.

Black; the mandibles pale yellow; antennæ, legs, and tegulæ

pale ferruginous. Wings hyaline, slightly iridescent; nervures pale ferruginous.

Length 5 mm.

*Hab.* Mackay, Queensland (*Turner*); April.

Differs from typical *Stigmus* in the non-petiolate abdomen.

#### HARPACTOPHILUS STEINDACHERI Kohl.

♀. The posterior ocelli are nearer to the posterior margin of the head than to each other.

♂. The mandibles, antennæ, and legs are ferruginous; the front, cheeks, head beneath, and prosternum golden. The front is much more closely and finely punctured than in the female. The apical dorsal segment of the abdomen is strongly emarginate. As in all the species of the genus, there is a semicircular depression at the base of the second ventral segment.

*Hab.* Mackay, Queensland; October to May. Also from Cairns and Cooktown.

#### HARPACTOPHILUS BICOLOR Sm.

♀. Very near *H. steindachneri*, from which it differs in the greater breadth of the thorax, which is almost as wide as the head, the more prominent angles of the pronotum, and the fuscous colour of the wings.

*Hab.* Mysolè.

#### HARPACTOPHILUS KOHLII, sp. n.

♀. Mandibles bidentate at the apex, the teeth short and feeble, the inner tooth a little the longest. Clypeus convex, with a longitudinal carina from the base almost reaching the apex, at the extreme apex there is a small, smooth, triangular truncation; the sides of the clypeus are punctured. Above the clypeus is a very prominent, narrow, longitudinal carina, on each side of which are short curved striæ. The front between the eyes and the base of the antennæ is very closely punctured and covered with short, thin, greyish pubescence. Antennæ inserted very low down on the sides of the clypeus, far apart, as far from each other as from the eyes, the scape as long as the first five joints of the flagellum and equal in length to a little more than two-fifths of the distance between the eyes at the base of the antennæ. Vertex very coarsely rugose-striate, the cheeks very broad and coarsely striated. The ocelli situated in an almost equilateral triangle, the posterior ocelli almost in a straight line with the summit of the eyes, half as far again from the eyes as from each other, and more than twice as far from the posterior margin of the head as from each other. Eyes surrounded by a narrow sulcus, which is coarsely and closely punctured. The posterior margin of the head broadly emarginate, and about one-third broader than the mesonotum. Pronotum depressed below the level of the mesonotum and invisible from above. Mesonotum punctured-rugose, more than half as broad again as long; the scutellum

almost smooth. Mesopleuræ rather finely rugose-striate. Median segment much broader than long, narrowed towards the apex and vertically truncate posteriorly, shorter than the mesonotum; a large triangular space occupying almost the whole of the dorsal surface very coarsely reticulate and enclosed by carinæ; the sides of the segment striated, the surface of the posterior truncation coarsely rugose. Abdomen smooth and shining, shorter than the thorax and median segment combined. Legs not spinose.

Black; the mandibles (except the extreme apex), the scape of the antennæ, the apical half of the femora, the tibiæ above, and the tegulæ yellow; the apex of the mandibles, the flagellum, the abdomen, the base of the femora, the tibiæ beneath, and the tarsi ferruginous. Wings hyaline, nervures pale ferruginous.

The second cubital cell is more pointed on the radial nervure than in *H. steindachneri* Kohl, from which it may also be distinguished by the small triangular truncation at the apex of the clypeus, the larger head, which is much more produced posteriorly, and the absence of a visible pronotum above. It is somewhat intermediate between *H. steindachneri* and *H. arator*, but is nearer to the former.

Length 7-8 mm.

*Hab.* Mackay, Queensland (*Turner*).

#### HARPACTOPHILUS SULCATUS, sp. n.

♀. Clypeus triangular, convex, with a longitudinal carina from the base not quite reaching the apex, where there is a very small oblique triangular truncation. Mandibles feebly bidentate at the apex, the outer tooth a little the longest. Antennæ a little longer than the head, the length of the scape equal to nearly half the distance between the eyes at the insertion of the antennæ; the first four joints of the flagellum much longer than broad, the second joint twice as long as the first and more than half as long again as the second. Head very large, coarsely longitudinally striated, the striæ curving round the summit of the eyes, a narrow depressed line divided by deep punctures round the margin of the eyes, the small space between the eyes and the base of the mandibles smooth. The posterior ocelli nearly twice as far from the eyes as from each other and about the same distance from the posterior margin of the head as from the eyes. The posterior margin of the head depressed and broadly emarginate. Pronotum depressed below the mesonotum; the mesonotum about one-third narrower than the head, about half as broad again as long, coarsely longitudinally striated in the middle, coarsely rugose on the sides. Mesopleuræ obliquely striated; scutellum almost smooth. Median segment a little shorter than the mesonotum, the large enclosed triangular area on the dorsal surface very coarsely rugose, the segment strongly narrowed to the apex and vertically truncate posteriorly, the sides coarsely striated. Abdomen shining and almost smooth. The carina on the front of the head, between the grooves for the scape, is less strongly developed than in the allied species.

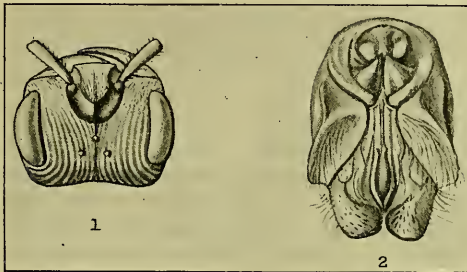


Black; the base of the scape yellow in front; the mandibles (except the extreme apex), the antennæ, abdomen, tibiæ, tarsi, and the apex of the femora ferruginous. Wings fusco-hyaline, nervures dark ferruginous.

The second cubital cell on the radial nervure is about one-third of the length on the cubital nervure, the radial cell is longer than in the allied species, and the nervures both on the fore and hind wings are produced, reaching much nearer to the margin. The recurrent nervure is received just before the apex of the first cubital cell.

Length 8 mm.

Text-fig. 106.



1. *Harpactophilus sulcatus* (head). 2. *H. steindachneri* Kohl: ♂ organs.

*Hab.* Kuranda, near Cairns, Queensland (*Turner*); January.

Most nearly allied to *H. arator* and *H. kohlii*, but the head is much shorter and broader than in the former species; the antennæ are longer than in other species of the genus and the proportions of the basal joints of the flagellum very different.

#### HARPACTOPHILUS ARATOR, sp. n. (Plate XXVI. fig. 1.)

♀. Mandibles bidentate at the apex, the teeth short and feeble. Clypeus very slightly advanced, obliquely triangularly truncate from the centre to the apex. Head very large, subquadrate, emarginate posteriorly, half as broad again as the mesonotum, exceedingly coarsely striated, the striæ longitudinal, curving round the summit of the eyes; a very strong longitudinal carina starting just below the anterior ocellus and produced in the shape of a ploughshare prominently overhanging the base of the clypeus. Eyes not quite reaching the base of the mandibles; the posterior ocelli nearly twice as far from the eyes as from each other and more than half as far again from the posterior margin of the head as from the eyes. Antennæ inserted lower than the base of the clypeus, far apart, as far from each other as from the eyes. Pronotum depressed below the mesonotum, which is coarsely longitudinally striated; the scutellum short, almost smooth, with a feebly impressed median line. Median segment

shorter than the mesonotum, narrowed and truncate posteriorly, the dorsal surface exceedingly coarsely reticulate, the sides of the segment and the mesopleuræ coarsely obliquely striated. Mesosternum transversely striated. Abdomen hardly as long as the thorax and median segment combined, smooth and shining, only four segments visible from above, the fifth segment beneath very deeply emarginate, the sides almost encircling the apical segment. Tibiæ and tarsi not spinose. Black; the mandibles, antennæ, tibiæ, tarsi, posterior femora, and abdomen ferruginous. Wings hyaline, the basal half tinted with fulvous, nervures ferruginous. The stigma is larger than in the common *H. steindachneri* Kohl, and the recurrent nervure is received just before the apex of the first cubital cell.

Length 8 mm.

*Hab.* Cairns, Queensland (*Dodd*).

Described from three specimens in the British Museum.

*HARPACTOPHILUS TRICOLOR*, sp. n. (Plate XXVI. fig. 2.)

♀. Mandibles slender, bidentate, the inner tooth short. Clypeus smooth and shining, triangular, convex in the middle at the base, with a small triangular truncation anteriorly. Front very broad, with a short prominent carina above the base of the clypeus. Antennæ shorter than the head, the scape stout and nearly half as long as the flagellum and less than half as long as the distance between the eyes at the base of the clypeus, the antennæ at the base as far from each other as from the eyes. The posterior ocelli nearer to each other than to the eyes, situated on the vertex a little behind the summit of the eyes and fully half as far again from the posterior margin of the head as from each other. Front finely longitudinally striated, most strongly just below the ocelli; vertex almost smooth, very finely striated behind the eyes. Eyes not quite reaching the base of the mandibles. The posterior margin of the head strongly emarginate. Pronotum transverse, very short, narrower than the head by about one-third, the anterior angles acute and prominent. Mesonotum punctured, shorter than the median segment and a little longer than broad; scutellum short and broad, almost smooth. Median segment rectangular, longer than broad, vertically truncate posteriorly, as broad as the mesonotum, rugose; with a triangular space enclosed by carinæ and divided by a longitudinal carina from the base to the apex, the surface of the truncation coarsely transversely striated. Abdomen smooth and shining, as long as the thorax and median segment combined, the six dorsal segments all well defined. Mesopleuræ almost smooth. Legs without spines, except the apical spines of the tibiæ.

Black; the mandibles, clypeus, front, antennæ, cheeks, the head beneath, the tegulæ, and the anterior and intermediate legs yellow; the abdomen and the posterior legs light ferruginous. Wings hyaline, iridescent; nervures testaceous.

The neuriation is similar to that of *H. steindachneri* Kohl, but

the second cubital cell is not pointed on the radial nervure, being about one-third as long on the radial as on the cubital nervure.

Length 5-6 mm.

*Hab.* Mackay, Queensland (*Turner*); September-December. Described from two specimens.

This is a much slenderer species than *H. steindachneri* and is much less coarsely sculptured. The pronotum is less depressed and has the anterior angles strongly prominent, in these characters showing an approach to the genus *Spilomena*.

*PSENULUS INTERSTITIALIS* Cam. (Plate XXVI. fig. 4.)

*Psenulus interstitialis* Cam. Tijdsch. v. Ent. xlix. p. 222, 1906.

*Psen. lutescens* Turner, Ann. & Mag. Nat. Hist. (7) xix. p. 273, 1907.

*Hab.* Etna Bay, New Guinea; Mackay and Cairns, Queensland.

I have not seen Cameron's type, but his description is quite sufficient.

*AMMOPHILA CLAVUS* Fab.

*Sphex clavus* Fab. Syst. Ent. p. 348. n. 12, 1775.

♀. Mandibles quadridentate; clypeus shining, very sparsely punctured, with a few coarse black hairs, a broadly triangular, oblique truncation at the apex, the apical margin very feebly and rather broadly emarginate in the middle. Second joint of the flagellum half as long again as the first and third combined. Eyes parallel on the inner margins; the posterior ocelli nearly half as far again from the eyes as from each other. Head opaque, finely punctured; a fine, impressed and slightly curved, transverse line behind the posterior ocelli; the front concave, with a delicate sulcus from the anterior ocellus, clothed with rather sparse greyish pubescence. Pronotum and mesonotum coarsely transversely striated, the posterior half of the mesonotum with oblique striae converging towards the middle of the posterior margin. Scutellum longitudinally striated; the mesopleuræ and metapleuræ vertically striate-rugose. Median segment transversely striated, the striae somewhat oblique, the middle of the segment coarsely reticulate and rather strongly convex at the base; the extreme apex of the segment with a little short, pale, fulvous pubescence. Abdomen shining, the four apical segments pruinose; the petiole two-jointed, equal in length to the posterior tibia and basal joint of the tarsus combined. Tarsal ungues simple, without a pad; the comb of the anterior tarsi with four slender spines on the outer margin of the basal joint, excluding those on the apical process.

Black; the mandibles in the middle fusco-ferruginous; the scape and two basal joints of the flagellum, the tegulæ, the legs (except the coxæ and spines of the tarsi), the petiole and the first following segment of the abdomen bright ferruginous; the base of the second joint of the petiole black; the four apical segments steel-blue. Wings pale flavo-hyaline, lighter at the apex, nervures testaceous.

♂. Mandibles bidentate; clypeus and front clothed with fine, short, silvery pubescence; the clypeus as long as the breadth at the middle, broadly emarginate on the apical margin. Second joint of the flagellum only slightly longer than the first and third combined. Eyes rather strongly convergent towards the clypeus. The whole of the mesonotum transversely striated; mesopleuræ and metapleuræ rugose. Petiole very long, equal in length to the posterior tibia and three basal joints of the tarsus combined.

Black; the tegulæ, the second joint of the petiole beneath, and the first following segment of the abdomen at the base above and beneath ferruginous; the abdomen beyond the petiole pruinose, dark steel-blue. Wings hyaline, clouded on the outer margin; nervures black.

Length, ♀ 23 mm., ♂ 22 mm.

*Hab.* Mackay to Cape York, Queensland (*Turner*); November to May.

Very near *A. instabilis* Sm. in the female sex, but differs in the form of the clypeus and in the proportionate length of the joints of the flagellum. The petiole is also longer. Also near *A. basalis* Sm. from India.

A common species throughout the coastal districts of North Queensland. The male is very different from those of other Australian species, and allied to Indian forms.

AMMOPHILA AURIFERA, sp. n. (Plate XXVI. fig. 3.)

♀. Mandibles with a very long acute apical tooth, the inner margin with three teeth, the one nearest the apex very short and broadly truncate, the second broad and rounded, the basal one very small and acute. Clypeus very slightly convex, depressed at the apex and subtruncate, very sparsely punctured, the punctures very large. Antennæ inserted about two and a half times as far from the eyes as from each other, about one-third further from the anterior ocellus than from the apex of the clypeus; the second joint of the flagellum about five times as long as the first and twice as long as the third. Posterior ocelli about one-quarter further from the eyes than from each other. Head opaque, almost smooth, with a longitudinal sulcus from the anterior ocellus to between the antennæ; the front round the base of the antennæ slightly concave. Pronotum coarsely transversely striated; mesonotum very obscurely transversely striated, the striæ almost obsolete on the disc, a deep and broad longitudinal sulcus from the anterior margin not reaching the posterior margin, a raised curved carina above the tegulæ. Mesopleuræ rugose; mesosternum transversely striated. Scutellum longitudinally striated; median segment transversely striated, the striæ arched in the middle and rather obscure, as long as the mesonotum and pronotum combined. Abdomen coriaceous, the petiole two-jointed and as long as the posterior tibia and first tarsal joint combined; the apical segment with long black hairs on the sides. Tarsal ungues simple, not bidentate, and without a pad.



Bright golden ferruginous ; the head (except the basal half of the mandibles), the scape, and five basal joints of the flagellum black ; the mesosternum, the four apical abdominal segments, a spot on the middle of the petiole, and part of the ventral surface of the petiole and the next segment black. Wings pale flavo-hyaline, very faintly tinged with fuscous at the apex ; nervures ferruginous.

Length 28 mm., exp. 29 mm. Breadth of mesonotum between the tegulae 3 mm.

*Hab.* Port Darwin (*Turner*) ; December.

Allied to *A. ardens* Sm., but is a much less robust species and less strongly sculptured.

The male has the mandibles bidentate, the clypeus longer than broad, the second joint of the flagellum less than twice as long as the third, the eyes convergent towards the clypeus, not parallel on the inner margins as in the female, the mesonotum and median segment much more strongly striated. The antennae are almost wholly black, as are also the disc of the mesonotum and the sides of the median segment ; the apical joints of the posterior tarsi are fuscous.

Length 24 mm.

#### AMMOPHILA EYRENSIS, sp. n.

♀. Mandibles quadridentate, the outer tooth very long and acute. Clypeus short and broad, the apical margin depressed, very shallowly emarginate in the middle ; sparsely punctured and with a few long black hairs. Antennae inserted close together ; the second joint of the flagellum more than twice as long as the third, which is twice as long as the first. Eyes parallel on the inner margin, the posterior ocelli a little further from the eyes than from each other. Head subopaque, almost smooth, a very fine transverse sulcus behind the posterior ocelli and not extending beyond them, a longitudinal frontal sulcus from the anterior ocellus, the front between the base of the antennae and the eyes clothed with short, thin, cinereous pubescence. Pronotum coarsely, mesonotum more finely transversely striated ; a longitudinal median sulcus on the anterior half of the mesonotum, in which lies a short longitudinal carina. Scutellum longitudinally striated ; the mesopleurae and metapleurae rugose-striate, the mesopleurae with a short, fine and shallow, vertical sulcus below the anterior wings. Median segment transversely striated, the striae slightly oblique, coarsely reticulate along the middle, broadly at the base and narrowly at the apex. Abdomen shining and almost smooth, the apical segments not pruinose ; the petiole two-jointed, the first joint seen from above very slightly longer than the second, the two combined a little longer than the posterior tibia and the basal joint of the tarsus combined. Tarsal ungues simple, without pads, the comb of the anterior tarsi rather long, with four spines on the basal joint, excluding those on the apical process.

Light ferruginous ; the head black ; the mandibles except at the apex, the basal half of the antennae and the mouth-parts

ferruginous; the posterior half of the mesonotum, a median longitudinal line on the anterior half, and the spines and ungues of the tarsi black; the three apical abdominal segments shining steel-blue; a spot at the base of the second joint of the petiole black. Wings hyaline, the base of the anterior pair pale flavo-hyaline; nervures testaceous.

The second and third cubital cells are equal in length on the radial nervure.

Length 18 mm.

*Hab.* Killalpanima, S. Australia, 100 miles east of Lake Eyre (*H. J. Hillier*).

Type in British Museum. Described from two specimens.

Near *A. instabilis* Sm., but is a smaller and more slender insect; the second joint of the flagellum is longer in proportion, and the dorsal surface of the median segment is not sharply raised towards the median line as in typical *instabilis*.

#### AMMOPHILA INSTABILIS Sm.

*Ammophila instabilis* Sm. Cat. Hym. B. M. iv. p. 214. n. 36, 1856, ♀.

*Ammophila impatiens* Sm. Trans. Ent. Soc. London, p. 247. n. 1, 1868, ♂ (as ♀).

These are without much doubt the sexes of one species.

*Hab.* Champion Bay, W. Australia.

#### AMMOPHILA ARDENS Sm.

*Ammophila ardens* Sm. Trans. Ent. Soc. London, p. 247. n. 2, 1868.

*Hab.* Swan River (*Du Boulay*), Mackay, Queensland (*Turner*).

#### AMMOPHILA SUSPICIOSA Sm.

*Ammophila suspiciosa* Sm. Cat. Hym. B. M. iv. p. 214. n. 35, 1856.

This is the only Australian species known in which the petiole is one-jointed. It is, as Smith points out, scarcely distinct from the N.-African species *A. argentea* Brullé.

*Hab.* Melbourne; Lake Eyre district; Perth; Tasmania.

#### SPHEX (ISODONTIA) ALBOHIRTUS, sp. n.

♀. Mandibles broad and tridentate. Clypeus rather sparsely punctured, clothed with very short, close pubescence which shows as silver in some lights, with sparse, long, brown hairs; slightly convex at the base and subcarinate, very broadly and shallowly emarginate at the apex, with a small and narrow emargination in the middle of the apical margin, the angles of the emargination produced into minute spines. Second joint of the flagellum as long as the third and half of the fourth. Eyes slightly convergent towards the clypeus, separated on the vertex by a space equal to the length of the third and fourth joints of the flagellum combined, and by nearly the same distance on the clypeus; the

posterior ocelli a little nearer to each other than to the eyes. Head shining, finely and rather sparsely punctured, the front with very short silvery pubescence, the sparse long hairs on the vertex brownish grey. Pronotum transverse and vertically depressed; the mesonotum sparsely, the mesopleurae closely punctured; scutellum flat. Median segment punctured-rugose, with a short longitudinal sulcus near the apex, without a sulcus from the stigma. Petiole as long as the basal joint of the posterior tarsus; the pubescence on the petiole and the sides of the median segment long and whitish, on the dorsal surface of the median segment very pale brown and very sparse. Abdomen shining and almost smooth, the first segment as long as the second, the apical segment finely punctured and subopaque. The first recurrent nervure is received near the apex of the second cubital cell, the second near the base of the third cubital cell; the second cubital cell is very large, subrectangular, more than half as long again on the cubital nervure as high.

Black; the abdomen with obscure blue reflections. Wings dark fusco-hyaline flushed with purple, nervures black. A patch of short fulvous pubescence at the apex of the posterior tibiae.

♂. Similar to the female, but the emargination on the middle of the apical margin of the clypeus is very faintly indicated; the abdomen is pruinose.

Length, ♀ 21 mm., ♂ 19 mm.

*Hab.* Mackay and Cairns, Queensland (*Turner*); December to March.

The wings are rather paler in Cairns specimens.

Allied to *S. ustulatus* Kohl, from Timor, also to *S. morosus* Sm. and *S. prasinus* Guér. The last two may prove to refer to one species. The emargination of the clypeus and the pale colour of the pubescence will serve to distinguish the present species.

SPHEX (ISODONTIA) NIGELLUS Sm.

*Sphex nigella* Sm. Cat. Hym. B. M. iv. p. 255, 1856.

*Hab.* Mackay and Cairns, Queensland (*Turner*).

This species seems to occur throughout Southern Asia and also in W. Australia.

SPHEX (ISODONTIA) OBSCURELLUS Sm.

*Sphex obscurella* Sm. Cat. Hym. B. M. iv. p. 251, 1856.

*Hab.* Tasmania.

Very near *S. nigellus*, from which it may be distinguished by the much shorter petiole and by the shape of the third cubital cell, which is as long as the second on the radial nervure; the clypeus is also rather longer.

SPHEX WALLACEI, NOM. NOV.

*Sphex nitidiventris* Sm. Proc. Linn. Soc., Zool. iii. p. 158, 1859 (nec Spinola).

Kohl states that *nitidiventris* Spin. also occurs in Java and

Luzon, though a S.-American species. The species in the British Museum which is identified as *nitidiventris* Spin., rightly in my opinion, though somewhat resembling Smith's species, has the petiole much longer and the clypeus different.

*Hab.* Aru (*Wallace*); Mackay to Cape York (*Turner*).

A common species in North Queensland.

SPHEX GILBERTI, sp. n.

♀. Clypeus convex, triangularly flattened from the middle to the apex, the apical margin very feebly and narrowly emarginate in the middle, the length equal to about three-quarters of the breadth at the apex; sparsely and rather coarsely punctured, with a feeble longitudinal carina from the base not reaching the middle, very sparsely clad with long, stiff, black hairs, the sides in some lights showing silvery reflections on very short, fine pubescence. Front clothed with very short, fine pubescence, silvery below the base of the antennæ, golden above, with very sparse, long black hairs above the base of the clypeus; the vertex bare, opaque, and almost smooth. Antennæ twice as far from the eyes as from each other; the first joint of the flagellum very short, the second and first together about equal in length to the third and fourth. The inner margins of the eyes almost parallel, converging slightly on the vertex; the posterior ocelli are nearer to each other than to the eyes. Pronotum slightly depressed below the level of the mesonotum, very steeply sloped anteriorly, opaque and smooth, the posterior margin with very short silvery pubescence. Thorax opaque, very finely and closely punctured; the mesonotum slightly depressed anteriorly in the middle and with an obscure longitudinal sulcus on each side above the tegulæ; the scutellum flat, with a very faint longitudinal line in the middle; postscutellum transversely depressed at the base; the mesopleuræ subopaque and very shallowly punctured. Median segment opaque, sparsely punctured, with sparse, stiff, blackish hairs; an obscure longitudinal sulcus from the base to the apex, the dorsal surface bordered by a very narrow shallow sulcus; a deeper and broader sulcus, in which are regular transverse striæ, on the metapleuræ from the stigma to the posterior angle. Abdomen shining, sparsely and very finely punctured; the epipygium coarsely punctured, with sparse and very long black hairs, and convex; the petiole not quite equal in length to the third joint of the posterior tarsi. Tarsal ungues with two small teeth near the base; the spines of the anterior tarsus long. The length of the third cubital cell on the radial nervure is about equal to the distance of the first transverse cubital nervure from the stigma; the first recurrent nervure is received at about one-fifth from the apex of the second cubital cell, the second at two-fifths from the base of the third cubital cell.

Black; the abdomen steel-blue. Wings flavo-hyaline, broadly pale fusco-hyaline at the apex; nervures ferruginous.

Length 26-28 mm.



*Hab.* Mackay, Queensland (*Turner*); February.

Very near *S. diabolicus* Sm., the Oriental form of *rufipennis* Fab., but differs in the postscutellum, which is not longitudinally divided or raised into a small tubercle on each side near the middle; the petiole also is rather shorter, and the abdomen is shining instead of opaque.

CERCERIS INEXPECTATA, sp. n. (Plate XXVI. fig. 5.)

♀. Mandibles blunt at the apex, with a large triangular tooth on the inner margin nearer to the base than to the apex. Clypeus sparsely punctured, broadly truncate at the apex, the central lobe slightly convex, bluntly produced on the apical margin at the junction of the lateral lobes, nearly twice as broad at the apex as at the base. The antennæ are inserted above the clypeus, at a distance from its base equal to three-quarters of the greatest length of the clypeus; the second joint of the flagellum is at least twice as long as the first and half as long again as the third; at the base the antennæ are separated from the eyes by a distance equal to the length of the scape, and from each other by about two-thirds of that distance. The eyes are slightly convergent

Text-fig. 107.



*Cerceris*: pygidial area of ♀.

1. *C. inexpectata*. 2. *C. labeculata*. 3. *C. prœdura*. 4. *C. multiguttata*.

towards the vertex; the posterior ocelli are about one-third further from the eyes than from each other, and as far from the posterior margin of the head as from the eyes. Head very broad, at least one-third broader than the mesonotum, the vertex coarsely punctured-rugose, the front sparsely and shallowly punctured, with an elevated carina between the antennæ. Pronotum very short, strongly rounded at the angles; mesonotum rather sparsely punctured, with a very shallow sulcus from the anterior margin not reaching the centre; mesopleuræ very coarsely punctured; scutellum short, very broadly truncate at the apex. Median segment strongly but not very closely punctured at the sides, with a sulcus from the base to the apex; the triangular space at the base smooth. Abdomen coarsely punctured, most closely on the third and fourth segments; the first segment rectangular, a little broader than long, nearly half as broad as the apex of the second segment; the dorsal pygidial area rugose, truncate at the apex, where it is half as broad as at the base.

Black; the base of the mandibles, clypeus, front as high as the base of the antennæ, the frontal carina, the sides of the pronotum, the postscutellum, a large spot on each side occupying the whole length of the median segment, the sides and apex of the first abdominal segment, the second segment except a triangular mark at the base, the apex of the fifth segment very broadly, and the two basal ventral segments yellow; the antennæ, the outer orbits of the eyes connected with a broad band on the posterior margin of the head, a large spot on each side occupying the greater part of the mesonotum, the scutellum, the apex of the fifth ventral segment, and the legs dull ferruginous; the coxæ above black. Wings pale flavo-hyaline, nervures light testaceous, a faint cloud in the radial cell.

Length 14 mm., exp. 24 mm.

*Hab.* Mackay, Queensland (*Turner*); November.

*CERCERIS LABECULATA*, sp. n.

♀. Mandibles simple, blunt at the apex. The central lobe of the clypeus slightly convex and feebly projected at the apex, narrowly emarginate anteriorly, the angles of the emargination produced into short teeth, narrowly truncate at the base, the length almost as great as the greatest breadth. Antennæ inserted high up on the front, nearer to each other than to the eyes, from which they are separated by a distance less than the length of the scape, which is short; the second and third joints of the flagellum nearly equal in length. The antennæ are separated from the base of the clypeus by a distance equal to two-thirds of the length of the clypeus. Inner margin of the eyes parallel; the posterior ocelli nearly as far from each other as from the eyes and nearer to the posterior margin of the head than to each other. Front sparsely and shallowly punctured, the carina between the antennæ not very strongly raised; vertex, mesonotum, mesopleuræ, and sides of the median segment coarsely punctured-rugose. Pronotum strongly rounded at the angles; the triangular space at the base of the median segment finely obliquely striated. First abdominal segment longer than broad, depressed at the base; the abdomen deeply and closely punctured; the pygidial area finely punctured, narrowly truncate at the apex, where it is only half as wide as at the base, rather broader in the middle than at the base.

Black; the mandibles at the base, the clypeus except the base and the extreme apical margin, the apex of the interantennal carina, the inner orbits of the eyes as high as the base of the antennæ very broadly, and the scape of the antennæ pale yellow; the posterior margin of the pronotum interrupted in the middle, the postscutellum, the apical margin of the first, second, and fourth abdominal segments, and a short vertical streak on the mesopleuræ, orange-yellow; the flagellum, tegulæ, scutellum, first abdominal segment, the middle of the second, the apex of the fifth, the pygidium, and the legs (except the coxæ, trochanters,

and base of the femora) ferruginous. Wings hyaline, stained with fuscous along the costa, nervures black.

♂. As in the female, but the clypeus is rather longer and not porrect at the apex, and the apical half of the fifth abdominal segment is yellow.

Length, ♀ 9 mm., ♂ 8 mm.

*Hab.* Cairns, Queensland (*Turner*); December and January.

Somewhat related to *C. antipodes* Sm., but the head is much narrower and it is a much smaller species. The clypeus is also very different.

#### CERCERIS MULTIGUTTATA, sp. n.

♀. Clypeus more than twice as broad as long on the central lobe, short, slightly porrect at the apex, the apical margin very slightly and broadly emarginate, with four minute teeth. Antennæ inserted nearer to each other than to the eyes, separated from the eyes by a distance equal to three-quarters of the length of the scape and about the same distance from the base of the clypeus; the second joint of the flagellum twice as long as the first and half as long again as the third. The inner orbits of the eyes very nearly parallel; the posterior ocelli a little further from the eyes than from each other, and about the same distance from the posterior margin of the head as from each other. Head, thorax, and median segment coarsely and closely punctured, the frontal carina strongly raised between the antennæ. Pronotum broadly rounded anteriorly; scutellum very broadly truncate at the apex. Median segment with a shallow sulcus from the base to the apex, the triangular space at the base smooth and shining. Abdomen coarsely punctured, the fourth and fifth more shallowly than the basal segments; the first segment broader in the middle than long, slightly narrowed to the base and apex and obliquely depressed at the base, not as long as the second segment. Pygidial area finely rugose, twice as long as broad, the sides nearly parallel, broadly rounded at the apex.

Black; the mandibles at the base, clypeus, outer orbits of the eyes, the inner orbits broadly to a little above the base of the antennæ, a narrow line from the anterior ocellus to the base of the clypeus, an oblique spot on each side of the vertex, the pronotum narrowly interrupted in the middle, the tegulæ, a spot on the mesopleuræ, a large round spot on each side of the scutellum, the postscutellum, a small spot on each side on the triangular space at the base of the median segment, a large spot on each side at the apex extending on to the sides, the first abdominal segment except at the base, the apical half of the second segment, the three apical abdominal segments (narrowly black at the base), the tibiæ, tarsi, and the apex of the femora all dull brownish yellow. Wings hyaline, tinged with fulvous, darker on the costa; nervures ferruginous.

Length 14 mm.

The male is similar to the female, but the central lobe of the clypeus is nearly as long as broad, truncate at the apex, and the yellow spots on the vertex are smaller.

Length 9 mm.

*Hab.* Mackay, Queensland (*Turner*); October.

CERCERIS PRÆDURA, sp. n.

♀. Clypeus depressed on the anterior margin, widely and shallowly emarginate, the central lobe twice as broad at the apex as long. Antennæ inserted half as far again from the eyes as from each other, the distance between them and the eyes equal to a little less than the length of the scape, the distance from the base of the clypeus nearly equal to the length of the scape and the first joint of the flagellum combined; the second joint of the flagellum is twice as long as the first and not quite half as long again as the third. The inner orbits of the eyes nearly parallel; the posterior ocelli about one-third further from the eyes than from each other, but as far from each other as from the posterior margin of the head. Clypeus and front shallowly punctured, the rest of the insect, except the scutellum, postscutellum, base of the median segment, and pygidium, very coarsely and deeply punctured. Pronotum very broadly and feebly rounded anteriorly, less deeply punctured than the mesonotum; scutellum transverse, shallowly punctured; postscutellum smooth. The triangular space at the base of the median segment is divided by a sulcus and is deeply but rather sparsely punctured. First abdominal segment about half as long again as broad, not as long as the second segment; pygidial area granulate, elongate-oval, and very narrowly truncate at the apex.

Black; the mandibles (except at the apex), the clypeus, front below the base of the antennæ, scape, the carina between the antennæ, the pronotum broadly interrupted in the middle, the tegulæ, scutellum, postscutellum, the base of the second abdominal segment broadly, the third segment (with the base broadly black in the middle), the fifth segment above, and the legs (except the base of the coxæ) yellow; the flagellum, the apex of the first abdominal segment, the pygidium, and the posterior femora ferruginous. Wings hyaline, the radial cell and the apex beyond it clouded with fuscous; nervures fusco-ferruginous.

♂. As in the female, but the clypeus is longer, being as long as the breadth of the central lobe at the apex and without the shallow emargination, the base a little nearer to the antennæ than in the female. The scutellum is black; the first abdominal segment ferruginous; the apex of the fifth and the whole of the sixth yellow; the femora and the apex of the posterior tibiæ ferruginous.

Length, ♀ 7 mm., ♂ 6 mm.

*Hab.* Mackay, Queensland (*Turner*); April and May.

Allied to *C. prædator* Sm. from Celebes, but the sculpture is different, also the shape of the pygidial area.



## CERCERIS VENUSTA Sm.

*Cerceris venusta* Sm. Ann. & Mag. Nat. Hist. (4) xii. p. 413, 1873.

*Hab.* Mackay and Cairns, Queensland (*Turner*).

A species very variable in colour. In specimens from Cairns the yellow markings are much reduced in size.

In the male the yellow marks on the median segment are sometimes wholly absent. The posterior ocelli in this species are very near together, about twice as far from the eyes as from each other.

## CERCERIS AUSTRALIS Sauss.

*Cerceris australis* Sauss. Mém. Soc. Phys. & Hist. Nat. Geneva, xiv. p. 1, 1854.

*Hab.* Tasmania (*Saussure*); Melbourne to Mackay (*Turner*).

## LIRIS HÆMORRHOIDALIS Fab.

*Liris magnifica* Kohl, Verh. zool.-bot. Ges. Wien, xxxiii. p. 356, 1883.

Though the colour of the pile on the female is more brilliant and the sculpture on the median segment rather stronger in females from Australia, I cannot detect any appreciable difference in the male.

*Hab.* Mackay to Cape York, Queensland (*Turner*).

## LARRA NIGRIPES Sauss.

*Larrada nigripes* Sauss. Reise d. Novara, Zool. ii. p. 1, Hym. p. 74, n. 3, 1867.

*Larra psilocera* Kohl, Verh. zool.-bot. Ges. Wien, xxxiii. p. 355, 1883.

*Hab.* Tasmania (*Saussure*); Adelaide, S. Australia; Mackay, Queensland; Adelaide River, Northern Territory.

Saussure's description seems to have been taken from a headless specimen, but I think there is little doubt that it is identical with Kohl's species. It is allied to *L. mansueta* Sm. from New Guinea.

## LARRA FEMORATA Sauss.

*Tachytes femoratus* Sauss. Mém. Soc. Phys. et Hist. Nat. Geneva, xiv. p. 1, p. 20, n. 9, 1854.

*Hab.* Sydney, N.S.W.; Mackay and Cairns, Queensland.

North Queensland specimens differ a little from southern ones in the shape of the pygidium, pronotum, and third cubital cell; the antennæ also are a little stouter. But the differences are very slight and do not seem sufficient to merit specific rank. *L. rufipes* Sm. from Celebes and *L. mendax* Sm. from Halmaheira are slight geographical variations of the same species.

## LARRA SCELESTA, sp. n.

♀. Clypeus very finely and closely punctured, the anterior margin shining and very slightly and broadly rounded. Mandibles strongly notched on the outer margin, very blunt at the apex, with a fringe of short stiff hairs on the outer margin. Antennæ inserted nearly as far from each other as from the eyes; the second joint of the flagellum only a little more than half as long again as the first, the third intermediate in length between the first and second. Eyes separated on the vertex by a distance not quite half as great again as the length of the second joint of the flagellum. Labrum bilobed. Front smooth and shining, with a longitudinal furrow on each side, the anterior ocellus lying in a broad and shallow transverse depression; the posterior ocelli very indistinct, with an irregular, shining, transverse depression behind them; the vertex minutely punctured. Thorax very finely and closely punctured, the pronotum longer and less abruptly depressed than in *L. nigripes* Sauss. Median segment much longer than the mesonotum, longer than in *L. nigripes*, finely rugose, with a carina from the base to the apex, most strongly marked at the base, vertically truncate posteriorly, the face of the truncation finely rugulose, with a median sulcus. Abdomen shining, very shallowly and minutely punctured, the three basal segments with a band of white pubescence on the sides; the pygidial area broadly triangular, rather sparsely but deeply punctured. Anterior tibiæ without spines. The second cubital cell is as long as the third on the radial nervure; the third is nearly three times as long on the cubital as on the radial nervure, the third transverse cubital is oblique and almost straight.

Black; the mandibles and the spines of the tibiæ fusco-ferruginous; tegulae testaceous. Wings fusco-hyaline, faintly iridescent; nervures black.

Length 14 mm.

*Hab.* Mackay, Queensland (*Turner*); Adelaide River, Northern Territory (*J. J. Walker*).

Differs from *L. nigripes* in the shorter antennæ with differently proportioned joints, in the much closer approach of the eyes on the vertex, the longer pronotum and median segment, and the broader pygidium. The pronotum and abdomen differ markedly from those of *L. australis*, with which it agrees in the smooth anterior tibiæ, which are heavily spined in *L. nigripes*.

## LARRA AUSTRALIS Sauss.

*Tachytes australis* Sauss. Mém. Soc. Phys. et Hist. Nat. Geneva, xiv. p. 19, 1854.

If my identification of this species is correct it is a *Larra*.

*Hab.* S. Australia; W. Australia.

## LARRA PACIFICATRIX, sp. n.

♀. Clypeus very broadly truncate at the apex, opaque and almost smooth, with a row of large punctures before the apical

margin. Second joint of the flagellum more than half as long again as the first, the second and third subequal and rather shorter than the fourth. Head subopaque, almost smooth, the front shining, the margins of the eyes broadly bordered with brilliant golden pubescence; the eyes separated on the vertex by a distance equal to three-quarters of the length of the second joint of the flagellum. Pronotum depressed below the level of the mesonotum, much higher in the middle than at the sides, almost vertical. Mesonotum and scutellum shining and almost smooth, only microscopically but very closely punctured; a large patch of short golden pubescence on the mesopleuræ below the base of the anterior wings. Median segment longer than broad, opaque, rather indistinctly transversely striated, the striæ more obscure towards the apex, a median carina from the base reaching beyond the middle, vertically truncate posteriorly, the face of the truncation coarsely transversely striated, with a deep median sulcus. Abdomen smooth and shining, highly polished, the pygidial area closely punctured; the second ventral segment strongly convex, flattened on the sides at the base and with a longitudinal carina from the base not reaching the middle, the apex of the first segment narrowly obliquely striated. The second cubital cell is pointed on the radial nervure, and about equal to the third in length on the cubital nervure; the two recurrent nervures are received before the middle of the second cubital cell, the first much further from the base of the cell than from the second. The tarsal ungues are long.

Black; the clypeus, scape, first joint of the flagellum, mandibles, and legs ferruginous; tegulæ testaceous. Wings fusco-hyaline, with a slight purple gloss and tinted with yellow; nervures black.

Length 17 mm., exp. 28 mm.

*Hab.* New Hebrides.

Type in Oxford University Museum ex coll. Saunders.

This species is very near *Notogonia*.

#### NOTOGONIA CHRYSONOTA Sm.

*Larrada chrysonota* Sm. Trans. Ent. Soc. London, p. 304, 1869.

*Larrada crassipes* Sm. Ann. & Mag. Nat. Hist. (4) xii. p. 294, 1873.

*Larra chrysonota* Kohl, Verh. zool.-bot. Ges. Wien, xxxiv p. 242, 1884.

*Hab.* Champion Bay, W. Australia; Adelaide, S. Australia.

#### NOTOGONIA REGINA, sp. n. (Plate XXVI. fig. 7.)

♀. Clypeus opaque, shining on the apical margin, which is slightly depressed, almost straight, very narrowly and shallowly emarginate in the middle; a carina from the base not reaching the apex. Head and thorax opaque, the front strongly raised on

the inner orbits of the eyes, with a longitudinal median sulcus; the anterior ocellus lying in a broad depression which almost reaches the eyes; on the vertex the eyes are separated by a distance less than twice as great as the length of the first joint of the flagellum. The second joint of the flagellum is more than twice as long as the first and nearly half as long again as the third; the fourth and fifth joints about equal to the third. Pronotum depressed very much below the mesonotum, very steeply sloped anteriorly; mesonotum with a rather broad median depression from the anterior margin to the middle. Median segment a little longer than the mesonotum, nearly half as long again as broad, obscurely transversely striated, the striae almost obsolete at the apex, vertically truncate posteriorly, the face of the truncation more strongly transversely striated, the sides of the segment indistinctly striated. Abdomen subopaque, the apical margins of the segments broadly depressed. Pygidial area pubescent, with an obscure median carina, the lateral carinae strongly raised, separated at the apex by a distance not quite equal to the length of the first joint of the flagellum. Anterior tibiae smooth, intermediate and posterior tibiae with a double row of three or four widely separated and feeble spines; tarsi spinose, the ungues simple and very long.

Black; the antennae orange; the pile on the head and abdomen silvery, the abdominal segments with broad bands of pile on the apical margin; a pale golden sheen on the pile on the front and a small patch of golden pubescence at the apex of the posterior tibiae. Wings fusco-hyaline, the apex of the anterior wings and a broad band across beyond the middle fuscous, the apex of the posterior wings broadly pale fuscous. Nervures black; testaceous at the apex of the radial and third cubital cells.

The recurrent nervures are both received before the middle of the second cubital cell, the distance between them not exceeding one-sixth of the length of the cell on the cubital nervure. The third cubital cell is about four times as long on the cubital as on the radial nervure.

Length 19 mm., exp. 27 mm.

*Hab.* Cairns, Queensland (*Turner*); December to March. Mackay, Queensland; October. Cape York, Queensland; May.

The specimen from Cape York has the wings fuscous from the base, with a large hyaline patch near the apex of the anterior wings; the four apical joints of the flagellum are black and the spines on the tibiae stronger.

The specimens from Mackay are smaller, measuring only 12-14 mm., the striae on the median segment are almost entirely absent, except on the face of the truncation, and there is a delicate longitudinal carina from the base almost reaching the apex. The six apical joints of the flagellum are black.

NOTOGONIA BASILISSA, sp. n.

♀. Mandibles notched rather deeply on the outer margin; the



clypeus opaque, very minutely punctured, clothed with rather coarse silvery pubescence, the apical margin transverse, very feebly emarginate in the middle and broadly smooth and shining. The second joint of the flagellum is a little less than twice as long as the first, a little longer than the third, and a little shorter than the fourth. Head opaque, the front clothed with rather coarse silvery pubescence; the eyes separated on the vertex by a distance rather less than the third joint of the flagellum. Pronotum steeply, but not nearly vertically sloped, higher in the middle than at the sides; the mesonotum broadly but shallowly depressed anteriorly, with sparse pubescence of a dull silver colour on the sides and in the depression. Median segment opaque, with a short longitudinal carina from the base not reaching the middle, very finely and closely punctured and very sparsely covered with short grey pubescence, a few short transverse striæ near the apical angles, the face of the posterior truncation very shallowly and irregularly transversely striated, with a deep and broad median sulcus, the sides of the segment almost smooth, delicately obliquely striated at the base; the segment much longer than broad. The four basal abdominal segments with broad bands of rather dull silvery pubescence on the apical margin; the pygidial area rounded at the apex, rather broad, and clothed with shining whitish pubescence; the second and third ventral segments convex, the second subcarinate at the base. The distance between the two recurrent nervures is less by about one-third than that between the first recurrent nervure and the base of the second cubital cell; the third cubital cell is more than half as long again as the second on the cubital nervure.

Black; the five or six apical joints of the flagellum, the apex of the joints of the tarsi, and the whole of the apical joint beneath fulvous; tegulæ testaceous. Wings subhyaline, nervures fuscoferruginous.

Length 13 mm.

*Hab.* Mackay, Queensland (*Turner*); March.

#### NOTOGONIA AGITATA, sp. n.

♀. Clypeus opaque, clothed with silvery pubescence, the apical margin broadly smooth and shining, transverse. Second joint of the flagellum a little more than half as long again as the first, the second and third subequal, shorter than the fourth. Head opaque, the front clothed with short silvery pubescence; the eyes separated on the vertex by a distance equal to three-quarters of the length of the second joint of the flagellum. Mesonotum closely and microscopically punctured, longitudinally and rather broadly depressed in the middle anteriorly, with a short and fine longitudinal sulcus in the depression, the disc with sparse and very short cinereous pubescence, the sides with closer pubescence of a silvery colour slightly tinged with pale golden. Median segment opaque, very finely granulated, much longer than broad; the surface of the posterior truncation strongly transversely striated,

with a deep median sulcus; a very obscure longitudinal carina from the base of the segment not reaching the middle. Abdomen subopaque; the four basal segments with broad apical bands of silvery pubescence; the pygidial area narrowly truncate at the apex, clothed with silvery pubescence; the second ventral segment smooth and convex, with a longitudinal carina on the basal third. The third cubital cell is half as long again as the second on the radial nervure and as long as the second on the cubital nervure; the two recurrent nervures are received by the second cubital cell before the middle, the first more than twice as far from the base of the cell as from the second.

Black; the scape beneath fusco-ferruginous; the tegulae and the apical margin of the fifth abdominal segment testaceous, the tarsi beneath, the apical joint of the tarsi above, and the tarsal unguis ferruginous. Wings hyaline, the outer margin bordered with pale fuscous, iridescent; nervures fusco-ferruginous.

Length 10-11 mm.

*Hab.* Mackay and Cairns, Queensland (*Turner*); December to May.

NOTOGONIA SERENA, sp. n.

♀. Mandibles very feebly notched on the outer margin; the clypeus very broadly rounded at the apex, clothed densely with rather coarse silver-grey pubescence, almost flat. Scape clothed with short, shining pubescence, the apex beneath smooth and shining; the first joint of the flagellum half as long as the second, the fourth a little longer than the third and about equal in length to the second. Eyes separated on the vertex by a distance equal to the length of the third joint of the flagellum. Head opaque; the pubescence on the front silver-grey and rather coarse, that on the broad depressed space round the anterior ocellus pale golden-brown. Pronotum very sharply sloped, almost vertical, much higher in the middle than at the sides; mesonotum very minutely punctured-rugulose; clothed with pubescence, which is rather coarse and silver-grey flushed with pale golden on the sides, darker and shorter on the middle; longitudinally depressed from the middle to the anterior margin. Median segment longer than broad, with a delicate longitudinal carina from the base to the middle, rather obscurely transversely striated, the striae most distinct at the base and the sides, more opaque than the thorax, vertically truncated posteriorly, the face of the truncation indistinctly transversely striated, with a low carina from the base not quite reaching the apex, the apical margin of the segment at the base of the truncation slightly raised. Abdomen opaque, pruinose, the apical margins of the four basal segments with broad bands of silvery pubescence, which is coarser on the sides than in the middle; the pygidial area more than twice as long as the breadth at the base, about half as wide at the broadly rounded apex as at the base, clothed with rather coarse golden pubescence. The two recurrent nervures are received very close together before the middle of the second cubital cell, the first is slightly curved

outwardly near its apex, the second very strongly curved outwardly near its base; the second cubital cell is half as long on the radial nervure as the third.

Black; the apex of the fifth abdominal segment and of the pygidium testaceous, the tegulae testaceous brown. Wings hyaline, the apex very faintly tinged with fuscous; nervures fusco-ferruginous.

Length 15 mm.

*Hab.* Mackay, Queensland (*Turner*); April.

NOTOGONIA OBLIQUETRUNCATA, sp. n.

♀. Mandibles rather deeply incised on the outer margin; the clypeus opaque at the base, with a carina from the base to the middle, clothed with short, fine, silvery pubescence, very broadly rounded or almost truncate at the apex, the apical margin broadly smooth and shining. The second joint of the flagellum equal in length to the third and more than twice as long as the first. Eyes separated on the vertex by a distance equal to the length of the second and half of the first joints of the flagellum. Head opaque, the front clothed with very short silvery pubescence. Pronotum very steeply sloped, much higher in the middle than at the sides; the mesonotum microscopically punctured, depressed in the middle anteriorly, the sides and posterior margin clothed with very pale golden pubescence. Median segment opaque, with short transverse striæ at the apical angles, vertically truncated posteriorly, the face of the truncation transversely striated, with a longitudinal sulcus from the base to the apex. Abdomen subopaque, the apical margins of the four basal segments with bands of silver-grey pubescence, broadly interrupted in the middle on the fourth; the pygidial area almost pointed at the apex, long and narrow, shining and sparsely punctured at the base, finely punctured and clothed with short, pale, fulvous pubescence at the apex. The first recurrent nervure is received almost as far from the second as from the base of the second cubital cell; the second is moderately rounded outwardly. The second cubital cell is much longer than the third on the cubital nervure and equal to it in length on the radial nervure, the third transverse cubital nervure oblique and scarcely curved, the radial cell short and broad, obliquely truncate at the apex.

Black; the mandibles, the scape beneath, and the anterior femora and tibiæ beneath fusco-ferruginous, the apical margin of the abdominal segments narrowly testaceous. Wings hyaline, faintly tinted with fuscous at the apex, most strongly in the radial cell; nervures black, the stigma fusco-ferruginous.

Length 10 mm.

*Hab.* Port Darwin (*Turner*); November.

NOTOGONIA RETIARIA, sp. n.

♀. Mandibles shining, deeply notched on the outer margin. Clypeus transverse, clothed with silvery pubescence, almost flat,

the centre very slightly convex, the anterior margin bare and shining, feebly produced in the middle, and narrowly and shallowly emarginate. Antennæ inserted at the base of the clypeus, a little nearer to each other than to the eyes; the second joint of the flagellum fully twice as long as the first, slightly longer than the third, about equal in length to the fourth, but a little shorter than the fifth. Eyes separated on the vertex by a distance equal to the length of the fifth joint of the flagellum. Head subopaque, very minutely and closely punctured; the front with a longitudinal depression on each side, the orbit of the eyes elevated, the anterior ocellus lying in a broad depression, the posterior ocelli indistinct, with a triangular depression behind them. Pronotum higher in the middle of the posterior margin than at the sides, the middle on a level with the mesonotum, steeply but not vertically sloped anteriorly. Mesonotum microscopically and very closely punctured and opaque, the mesopleuræ and scutellum subopaque, the former more distinctly punctured. Median segment scarcely longer than the mesonotum, a little longer than broad, coarsely reticulate, with an ill-defined carina from the base to the apex, sharply but not quite vertically truncate posteriorly, the face of the truncation transversely striated, with a median carina. Abdomen shining, microscopically punctured, the three basal segments with a band of white pubescence on the apical margin, interrupted on the basal segment; the pygidial area elongate triangular, narrowly truncate at the apex. The sides of the median segment are finely obliquely striated. The legs are slender, the anterior tibiæ unarmed, and the tarsal ungues long. The two recurrent nervures are received very close together, before the middle of the second cubital cell. The second cubital cell is at least half as long again on the radial nervure as the third, the second transverse cubital nervure is slightly curved inwards, the third is oblique and straight.

Black; the mandibles fuscous; the pubescence on the pygidial area very pale fulvous. Wings light fusco-hyaline, nervures black, the tegulæ fuscous.

Length 9 mm.

*Hab.* Perth, W. Australia.

Type in British Museum.

NOTOGONIA COMMIXTA, sp. n.

♀. Clypeus opaque and very finely punctured at the base, with a delicate carina not reaching the apex, the apex broadly smooth and shining, the margin very broadly rounded, with a very narrow and shallow emargination in the middle. Antennæ rather stout, the second joint of the flagellum twice as long as the first and about one-quarter longer than the third. Head opaque, the front and the base of the clypeus clothed with short fine silver pubescence, which is only visible in certain lights; the eyes separated on the vertex by a distance equal to one-third more than the length of the first joint of the flagellum. Pronotum very



steeply sloped, not very strongly raised in the middle; the mesonotum and scutellum subopaque, very closely and microscopically punctured, a very short, impressed, longitudinal line on each side of the mesonotum twice as far from the middle as from the tegulae. Median segment a little longer than broad, rather indistinctly transversely striated, the striae more distinct at the base than at the apex, with an obscure carina from the base to the apex; the posterior truncation finely transversely striated, with a deep median sulcus. Abdomen subopaque, the three basal segments with bands of dull silvery pubescence on the apical margin; the pygidial area rather broad at the base, narrowly rounded at the apex, clothed with pale fulvous pubescence; the apex of the first ventral segment finely obliquely striated, the second and third sparsely clothed with very short, fine, grey pubescence. The third cubital cell is nearly twice as long as the second on the radial nervure and a little longer than the second on the cubital nervure; both recurrent nervures are received before the middle of the second cubital cell, the first more than twice as far from the base of the cell as from the second.

Black; the tarsal unguis fusco-ferruginous. Wings fusco-hyaline, faintly flushed with opalescent blue; nervures black.

Length 13 mm.

*Hab.* Cairns, Queensland (*Turner*); February to May.

The mesonotum is only very slightly depressed in the middle on the anterior margin.

#### NOTOGONIA ABBREVIATA, sp. n.

♀. Mandibles very shallowly notched on the outer margin; the clypeus opaque, very finely and closely punctured, the apical margin transverse and strongly depressed in the middle, the base bare, the middle with rather long, sparse, silvery pubescence changing to fulvous at the apex. Scape with a little short white pubescence beneath; the first joint of the flagellum half as long as the second, the fourth slightly longer than the second or third, which are nearly equal in length to each other. Head opaque, the front clothed with silvery pubescence; the eyes separated on the vertex by a distance equal to three-quarters of the length of the second joint of the flagellum. Pronotum almost vertical, much higher in the middle than at the sides; mesonotum very broadly and shallowly depressed in the middle anteriorly, opaque and very minutely punctured; the pubescence short, sparse and cinereous, that on the mesopleurae also cinereous, with a patch of silver-white pubescence below the base of the anterior wings. Median segment more opaque than the mesonotum, very shallowly and obscurely transversely striated, the striae only visible in a strong light, with a rather shallow sulcus from the base to the apex, vertically truncate posteriorly, with a deep longitudinal sulcus on the face of the truncation, the segment is as broad at the base as long, narrowed posteriorly. Abdomen opaque, with broad

bands of silvery pubescence on the apical margins of the three basal segments; the pygidial area rather broadly rounded at the apex, more than twice as broad at the base as at the apex, clothed with sparse, stiff, black pubescence. The second ventral segment has a longitudinal carina from the base to the middle. The two recurrent nervures are received very near together, just beyond one-third from the base of the second cubital cell; the third cubital cell is longer by one-third than the second on the radial nervure.

Black. Wings light fusco-hyaline, nervures black.

Length 16 mm.

*Hab.* Cairns, Queensland (*Turner*); February.

The median segment is shorter and broader than in most species of *Notogonia*, but otherwise it shows all the characteristic points of the genus.

#### TACHYTES RUBELLUS, sp. n.

♂. Clypeus closely punctured, depressed and shining at the apex, the margin slightly recurved. Head closely and very minutely punctured; the front covered with shining white pubescence, a deep longitudinal sulcus on the vertex broadened just behind the posterior ocelli into a small triangular depression. Eyes convergent above, separated on the vertex by a distance about equal to the length of the first and second joints of the flagellum combined; the third joint of the flagellum of almost the same length as the second. Thorax very minutely and closely punctured, the sides thinly clothed with white pubescence; the mesonotum depressed in the middle anteriorly; the median segment about one-fourth shorter than the mesonotum, narrowed and truncate posteriorly, a deep longitudinal sulcus on the surface of the truncation. Abdomen shining, minutely punctured; the apical margin of the segments with interrupted bands of white pubescence. The mesopleuræ, the sides of the median segment, and the femora beneath with silvery pubescence.

Black; the mandibles, the anterior tibiæ beneath, the anterior tarsi, the three or four apical joints of the intermediate and posterior tarsi, the spines of the tibiæ, and a spot at the apex of the intermediate and posterior tibiæ ferruginous; the tegulæ testaceous; the abdomen entirely ferruginous red, paler on the apical margin of the segments.

Length 7 mm.

*Hab.* Port Darwin (*Turner*); December.

#### TACHYTES FORMOSISSIMUS, sp. n. (Plate XXVI. fig. 6.)

♀. Head, thorax, and median segment densely covered with shining golden pubescence; the clypeus transverse and finely punctured, the anterior margin shining and without pubescence. A longitudinal sulcus on the vertex behind the ocelli; the eyes convergent above, separated on the vertex by a distance slightly

exceeding the length of the two basal joints of the flagellum. Pronotum depressed below the mesonotum, which is depressed in the middle of the anterior margin; scutellum short, broadly truncate at the apex. Median segment about one-third shorter than the mesonotum, narrowed posteriorly and truncate, a deep median sulcus starting from just above the base of the truncation and continued along its surface to the apex. Abdomen extremely minutely punctured, without pile.

Head and thorax black; the apex of the clypeus, the mandibles, and the scape of the antennæ ferruginous brown; the scutellum and median segment fusco-ferruginous; abdomen and legs light testaceous red, the apical margin of the abdominal segments paler; pubescence golden. Wings hyaline; nervures black, testaceous red at the base and on the costa.

Length 10 mm.

*Hab.* Mackay, Queensland (*Turner*); February.

This beautiful species is allied to *fervida* Sm., but is much smaller and less stoutly built.

#### TACHYTES APPROXIMATUS, sp. n.

♀. Clypeus closely punctured, transversely depressed and truncate on the apical margin; the clypeus and front clothed with pale shining pubescence, with a faint golden sheen. Antennæ inserted nearer to each other than to the eyes; the second joint of the flagellum about three times as long as the first and equal in length to the first and third combined, the fourth, fifth, and sixth equal in length to each other, each slightly shorter than the third. Eyes separated on the vertex by a distance about equal to the length of the third joint of the flagellum; the vertex very minutely punctured, with a fine longitudinal sulcus from the posterior ocelli to the posterior margin of the head. Pronotum very much depressed and very small; the thorax and median segment very minutely punctured; a broad line of short, pale golden pubescence on the sides of the mesonotum, very narrowly continued on the posterior margin, with a quadrate, narrowly divided patch on each side of the middle of the anterior margin; the pubescence on the postscutellum and the sides of the median segment pale and shining, the segment only a little more than half as long as the mesonotum, steeply but not quite vertically sloped posteriorly, with a median sulcus on the posterior face. Abdomen shining, finely punctured and pubescent, the pubescence short, thin, and dark, the apical margins of the four basal dorsal segments with a broad band of pale and somewhat obscure golden pubescence; the pygidial area long and not very narrow, narrowly rounded at the apex and clothed with brilliant golden pubescence. The basal joint of the anterior tarsus with five spines on the outer margin. The third cubital cell is a little longer than the second on the radial nervure, and about as long as the second on the cubital nervure, narrow and much curved.

Black; the mandibles fusco-ferruginous; the tegulæ, tibiæ,

tarsi, the apex of the femora, and the apical margin of the fifth abdominal segment very narrowly ferruginous. Wings hyaline, nervures ferruginous.

♂. As in the female, but the pubescence on the head and thorax is longer and duller, the anterior margin of the clypeus is more rounded, the apical margin of the abdominal segments is broadly dull ferruginous with the band of pubescence as in the female on the four basal segments, the pubescence on the apical segment is whitish, and the posterior femora are black at the base only. The abdomen is more closely punctured than in the female. The eyes are yellowish green in both sexes in life.

Length, ♀ 14 mm., ♂ 13 mm.

Hab. Mackay, Queensland (*Turner*); February and March.

*Key to the Australian Species of Tachysphex.*

- A. Abdomen wholly black.
- a. Tibiæ and tarsi light ferruginous ..... *T. imbellis.*
  - b. Tibiæ and tarsi almost entirely black
    - a<sup>2</sup>. Abdomen opaque, covered with very short pubescence.
      - a<sup>3</sup>. Mesonotum not visibly punctured; abdomen sub-opaque ..... *T. fortior.*
      - b<sup>3</sup>. Mesonotum very distinctly punctured; abdomen opaque ..... *T. mackayensis.*
    - b<sup>2</sup>. Abdomen more or less shining, pubescent on the apical margin of the segments only.
      - a<sup>3</sup>. Dorsal surface of the median segment longitudinally striated ..... *T. walkeri.*
      - b<sup>3</sup>. Dorsal surface of the median segment not striated.
        - a<sup>4</sup>. Thorax and median segment strongly pubescent . *T. pilosulus.*
        - b<sup>4</sup>. Thorax and median segment not pubescent.
          - a<sup>5</sup>. Median segment longer than the mesonotum... *T. tenuis.*
          - b<sup>5</sup>. Median segment not longer than the mesonotum.
            - a<sup>6</sup>. Mesonotum subopaque ..... *T. debilis.*
            - b<sup>6</sup>. Mesonotum shining.
              - a<sup>7</sup>. Pronotum sharply sloped.
                - a<sup>8</sup>. Second joint of the flagellum much longer than the third. Length 8 mm.. *T. pacificus.*
                - b<sup>8</sup>. Second joint of flagellum shorter than the third. Length 13 mm. .... *T. nigerrimus* Sm.
              - b<sup>7</sup>. Pronotum gradually sloped.
                - a<sup>8</sup>. Head shining, almost smooth. Wings and antennæ short ..... *T. pugnator.*
                - b<sup>8</sup>. Head opaque, finely punctured. Wings and antennæ of moderate length ..... *T. hypoleius* Sm.

B. Two basal segments of abdomen ferruginous red ..... *T. truncatifrons.*

*TACHYSPHEX TRUNCATIFRONS*, sp. n.

♀. Mandibles very strongly incised on the outer margin. Clypeus broadly truncate on the apical margin, slightly convex in the middle, obliquely and broadly triangularly truncate from the middle to the apex, the base opaque and indistinctly punctured, the surface of the truncation shining, with a few scattered punctures. Antennæ inserted as far from each other as from the eyes; the second, third, and fourth joints of the flagellum about equal in length, each at least three times as long as the first joint



Eyes separated on the vertex by a distance equal to the length of the first two joints of the flagellum; the posterior ocelli situated on a convexity, divided by a fine longitudinal sulcus, with a rather large, shallow, subtriangular depression on the vertex behind them. Head opaque, the vertex very finely and closely punctured, the depression behind the ocelli smooth and shining, the front very delicately rugulose, slightly raised in the middle above the base of the antennæ, where it is divided by a longitudinal sulcus; the front almost flat. Thorax subopaque, very closely and delicately punctured; the pronotum not very much below the level of the mesonotum, and very gradually sloped anteriorly. Median segment opaque, a little shorter than the mesonotum, very finely rugulose, truncate posteriorly, with a deep median sulcus on the face of the truncation. Abdomen shining and almost smooth, the three basal segments depressed on the apical margin, narrowly at the sides, broadly in the middle; the pygidial area elongate and pointed, shining, with scattered punctures. The tibiæ are very feebly spined; the comb of the anterior tarsi is long, but thin. The third transverse cubital nervure is rather feebly curved.

Black; the apical joint of the tarsi fusco-ferruginous; the two basal abdominal segments above and beneath bright ferruginous red. Wings hyaline stained with fuscous, nervures fuscous.

Length 9 mm.

*Hab.* Queensland.

Type in Oxford University Museum ex coll. Saunders.

Allied to *T. rufo-niger* Bingh. from India.

*TACHYSPHEX IMBELLIS*, sp. n.

♀. Mandibles incised on the outer margin; clypeus shining, very sparsely punctured, the punctures large, feebly convex, the apical margin subtruncate. Head, thorax, and abdomen shining and almost smooth; a very delicate longitudinal sulcus reaching from the anterior ocellus nearly to the base of the clypeus; the posterior ocelli subovate, situated on a very slight elevation, with a small and fairly deep depression on the vertex behind them; the eyes separated on the vertex by a distance about equal to the length of the first two joints of the flagellum. Antennæ inserted nearer to each other than to the eyes; the second, third, and fifth joints of the flagellum nearly equal in length, each less than twice as long as the first, the fourth joint very slightly longer than the others. Pronotum depressed below the mesonotum, a little more than half as wide as the head. Median segment at the base a little more than half as broad again as long, at the apex only as broad as long, opaque and finely shagreened, almost vertically truncate posteriorly, the face of the truncation finely and obscurely transversely striated with a deep rounded depression at the base. The apical segment of the abdomen shining, finely and very sparsely punctured, pointed at the apex. The comb of the anterior tarsi is very poorly developed, the setæ being very few and far apart. The third cubital cell is not much extended on the cubital nervure,

being more than half as long on the radial as on the cubital nervure; the radial cell is short, not more than equal to the length of the second cubital cell on the cubital nervure.

Black; the mandibles except at the apex, the tegulæ, tibiæ, tarsi, and the apex of the femora light ferruginous, the scape of the antennæ beneath fuscous. Wings hyaline, nervures fuscous.

A little grey pubescence on the sides of the abdominal segments, otherwise bare.

Length 6 mm., exp. 10 mm.

*Hab.* Mackay, Queensland (*Turner*); November.

TACHYSPHEX FORTIOR, sp. n.

♀. Clypeus shining, strongly but sparsely punctured at the apex, moderately convex at the base, then almost vertically depressed, and subtruncate on the apical margin. Antennæ inserted as far from each other as from the eyes; the second joint of the flagellum twice as long as the first, a little shorter than the third or fourth and about equal to the fifth. Eyes separated on the vertex by a distance scarcely greater than the length of the third joint of the flagellum. Head opaque, very minutely punctured; the front very feebly convex, divided by a rather strong longitudinal sulcus which reaches the anterior ocellus and is continued behind it to the posterior margin of the head. Posterior ocelli subovate, situated on a convexity, with a small deep depression behind them. Pronotum depressed below the mesonotum, the slope almost vertical; mesonotum subopaque, nearly twice as broad as long. Median segment opaque, shorter than the mesonotum, finely shagreened, vertically truncate posteriorly, the face of the truncation rather finely transversely striated, with a median sulcus. Abdomen subopaque; the apical margin of the segments feebly depressed, very broadly in the middle, and thinly clothed with grey pubescence; the apical segment smooth, with a few scattered punctures near the base, subcarinate longitudinally in the middle and pointed at the apex. Tarsi strongly spinose, the comb of the anterior tarsi well developed; the legs stout. The first recurrent nervure is received almost as far from the second as from the base of the second cubital cell; the third cubital cell is strongly curved on the outer margin and reaches on the cubital nervure nearly two-thirds of the way from the apex of the second cubital cell to the outer margin of the wing.

Black; the pubescence greyish white; the tegulæ, the anterior tarsi, the two apical joints of the posterior and intermediate tarsi, and the extreme base of the tibiæ ferruginous.

Length 10 mm.

*Hab.* S.W. Australia (*Du Boulay*).

Type in British Museum.

Allied to *T. debilis* described in this paper, but is a much more stoutly built insect and the legs are stronger and much more spinose.

## TACHYSPHEX MACKAYENSIS, sp. n.

♀. Clypeus finely punctured at the base, very coarsely and closely punctured, the apical margin very narrowly depressed and shining, very narrowly emarginate in the middle. Antennæ inserted a little further from the eyes than from each other; the second joint of the flagellum twice as long as the first, but a little shorter than the third or fourth. Eyes separated on the vertex by a distance slightly greater than the length of the third joint of the flagellum; the posterior ocelli situated on a convexity with a small depression behind them. Head opaque, very finely and shallowly punctured; the clypeus at the base and the front below the base of the antennæ closely, the front above the base of the antennæ very sparsely, clothed with moderately long white pubescence. Thorax very closely punctured; the pronotum strongly depressed below the level of the mesonotum, almost vertical, a little higher in the middle than at the sides. Median segment almost as long as the mesonotum, narrowed towards the apex and vertically truncate posteriorly, opaque and finely punctured-rugose, with a little scattered pubescence; the face of the truncation finely transversely striated, with a deep median sulcus not reaching the apex. Abdomen opaque, covered with extremely short grey pubescence, which is rather longer and whiter on the depressed apical margin of the segments; the pygidial area shining, with large and scattered punctures, almost pointed and rather narrow; the ventral segments smooth and shining. The posterior tibiæ are rather strongly spined, the comb of the anterior tarsi is long but rather thin. The third cubital cell is very long on the cubital nervure, reaching nearly two-thirds of the way from the apex of the second cubital cell to the margin of the wing; the third transverse cubital nervure is much curved; the second cubital cell is longer than the third on the radial nervure, but scarcely as long on the cubital.

Black; the tegulæ and the comb of the anterior tarsi testaceous.

Length 12 mm., exp. 19 mm.

*Hab.* Mackay, Queensland (*Turner*).

Allied to *T. fortior* described above, but the eyes are further apart on the vertex, and the sulcus on the vertex is absent, the mesonotum is punctured, the median segment longer and more strongly narrowed posteriorly, the pygidium narrower, and the posterior tibiæ more strongly armed.

## TACHYSPHEX WALKERI, sp. n.

♀. Clypeus shining, sparsely punctured, very finely at the base, more coarsely at the apex, obliquely depressed from the middle to the apex, where it is broadly truncate. Antennæ long and slender, nearly as long as the head, thorax, and median segment combined, inserted further from the eyes than from each other; the second joint of the flagellum more than twice as long as the first and about one-quarter shorter than the third. Eyes separated on the vertex by a distance not quite equal to the length of the second

joint of the flagellum; the posterior ocelli subovate, situated on a convexity, with a small triangular depression on the vertex behind them. Head opaque, the vertex smooth, the front slightly convex, finely shagreened, with a delicate, longitudinal, median sulcus; the space round the base of the antennæ clothed with short silver pubescence. Thorax subopaque, the scutellum shining; the pronotum much depressed below the mesonotum, gradually sloped anteriorly. Median segment as long as the mesonotum, narrowed posteriorly, opaque and rather irregularly longitudinally striated, the sides finely obliquely striated, vertically truncate posteriorly, the face of the truncation transversely striated, with a median sulcus. Abdomen microscopically punctured, the apical margin of the three basal segments slightly depressed, with a band of short, rather thin, silver pubescence; the pygidial area polished, with a few fine and scattered punctures, elongate triangular. The posterior tibiæ very feebly spined, the comb of the anterior tarsi only feebly developed. Third cubital cell narrow, the third transverse cubital nervure rather strongly curved inward; the second cubital cell much shorter than the third on the radial nervure, the radial nervure strongly continued, the appendiculate cell being clearly defined and reaching nearer to the outer margin than the cubital nervure.

Black; the scape beneath fusco-ferruginous; the apex of the tegulæ and the comb of the anterior tarsi testaceous.

Length 7 mm.

*Hab.* Sand Islet, Long Reef, N.W. Australia (*Walker*); June.  
Type in British Museum.

TACHYSPHEX PILOSULUS, sp. n.

♀. Clypeus very broadly rounded anteriorly, clothed with dark grey pubescence, changing to silver in some lights, the apical margin bare and recurved, with a shining transverse depression before it. Antennæ inserted about half as far again from the eyes as from each other; the second joint of the flagellum twice as long as the first and about equal in length to the third and the fourth singly. Eyes separated on the vertex by a distance scarcely exceeding the length of the second joint of the flagellum; the posterior ocelli oblong and oblique, situated on a convexity, with no depression or sulcus on the vertex behind them. Front rather strongly convex, clothed with long and rather close silver-grey pubescence, a very fine longitudinal sulcus below the anterior ocellus. The whole head opaque, very minutely punctured. Pronotum very much depressed below the level of the mesonotum, very steeply sloped anteriorly. Thorax and median segment finely shagreened, opaque, with sparse and rather long cinereous pubescence; the mesonotum large, about half as long again as the median segment, which is scarcely narrowed posteriorly, and vertically truncate, the surface of the truncation indistinctly transversely striate-rugulose, with an almost obsolete median sulcus. Abdomen subopaque, the two apical segments and the whole



ventral surface shining, the basal segment with sparse and rather long grey pubescence at the base, the three basal segments with a broad band of shining silvery pubescence faintly flushed with golden on the apical margin, the fourth segment with a similar band on the sides only. Pygidial area elongate-triangular, very narrowly truncate at the apex, microscopically punctured and less polished than the fifth segment. The comb on the anterior tarsi is very long. The first recurrent nervure is received at the same distance from the base of the second cubital cell as from the second recurrent nervure, which is received just beyond the middle of the cell. The second cubital cell is about half as long again as the third on the radial nervure; the third is much produced on the cubital nervure, reaching two-thirds of the way from the apex of the second to the margin of the wing; the second and third transverse cubital nervures are both strongly curved. The cubital nervure of the posterior wings branches off immediately beyond the apex of the anal cell.

Black; the spines of the tibiae and tarsi whitish; the tegulae and the comb of the anterior tarsi testaceous. Wings hyaline; nervures ferruginous at the base, fuscous at the apex. Anterior tarsi fusco-ferruginous.

♂. Similar, but slenderer, the head and thorax less strongly pubescent, the eyes a little nearer together on the vertex, and the apical abdominal segments more opaque. The eyes in life are bright green.

Length, ♀ 11 mm., ♂ 10 mm.

*Hab.* ♀, Cape York, Queensland; ♂, Cairns and Mackay, Queensland (*Turner*); November to April.

#### TACHYSPHEX TENUIS, sp. n.

♀. Clypeus shining, almost smooth at the base, punctured near the apex, moderately convex, the apical margin transversely depressed and shallowly emarginate in the middle. Antennae inserted nearer to each other than to the eyes; the second joint of the flagellum less than twice the length of the first and distinctly shorter than the third or fourth. Eyes separated on the vertex by a distance equal to the length of the first and third joints of the flagellum combined; the posterior ocelli ovate and oblique, placed on a convexity, with a small, deep, triangular depression on the vertex behind them. Head opaque, very minutely punctured, the front slightly convex, with an obscure longitudinal sulcus from the anterior ocellus; the space round the base of the antennae clothed with short white pubescence. Pronotum moderately depressed below the mesonotum, not very steeply sloped. Thorax slightly shining and almost smooth; the median segment opaque, a little longer than the mesonotum and longer than broad, vertically truncate posteriorly, the face of the truncation finely transversely striated, with a deep median sulcus. Abdomen slender, slightly shining, and very minutely punctured; the apical margin of the three basal segments depressed, most broadly in the

middle, with a little short grey pubescence on the sides. Pygidial area shining and sparsely punctured, narrow and almost pointed at the apex. The comb on the anterior tarsi is not very strongly developed. The second cubital cell is very short on the radial nervure, only half as long as the third; the first recurrent nervure is received at the same distance from the base of the cell as from the second recurrent nervure, which is received close to the middle of the cell. The third cubital cell is not much prolonged on the cubital nervure, reaching only about two-fifths of the way from the apex of the second cell to the margin of the wing. The second and third transverse cubital nervures are scarcely curved.

Black; the apical half of the flagellum and the apical joint of the tarsi fuscous; the tegulae testaceous. Wings hyaline, nervures ferruginous.

Length 6 mm.

*Hab.* Port Darwin (*Turner*); December.

TACHYSPHEX DEBILIS, sp. n.

♀. Mandibles strongly incised on the outer margin; clypeus short and broad, strongly transversely depressed on the apical margin and feebly emarginate in the middle, opaque at the base, shining at the apex, and sparsely punctured. Front round the base of the antennae clothed with very short silvery pubescence, with a shallow longitudinal sulcus reaching very obscurely to the anterior ocellus. Head opaque, the front slightly convex; the posterior ocelli subovate, situated on an elevation, with a small and rather deep rounded depression behind them. Antennae inserted much nearer to each other than to the eyes; the second joint of the flagellum a little shorter than the third, the third and fourth equal in length, the fifth equal to the second. Eyes strongly convergent, separated on the vertex by a distance equal to the length of the first two joints of the flagellum combined. Pronotum scarcely more than half as broad as the head, depressed below the level of the mesonotum, which is opaque and microscopically punctured; the scutellum shining, very minutely punctured. Median segment very opaque, finely shagreened, nearly twice as broad at the base as long, almost vertically truncate posteriorly; the face of the truncation indistinctly transversely striated, with a median sulcus. Abdomen shining, minutely punctured, the apical margin of the segments with broadly interrupted bands of obscure silver pubescence; the apical segment pointed, shining, and very sparsely punctured. The tibiae are very feebly spined, the anterior tibiae smooth; the tarsi more feebly spined than is usual in the genus, the comb of the anterior tarsi only moderately developed.

Black, the tegulae fuscous. Wings hyaline, nervures fuscous.

The third cubital cell is narrow and strongly extended along the cubital nervure towards the margin of the wing.

Length 7 mm.

*Hab.* Cairns, Queensland (*Turner*); February.

## TACHYSPHEX PACIFICUS, sp. n.

♀. Clypeus very broadly truncate at the apex, strongly and closely punctured at the apex, sparsely and more finely at the base. Antennæ inserted as far from each other as from the eyes; the second joint of the flagellum three times as long as the first and about one-third longer than the third, the fourth and fifth almost equal in length to the third; the distance between the eyes on the vertex equal to the length of the second joint of the flagellum; the posterior ocelli elongate-ovate, situated on a very feeble elevation, a small depression on the vertex behind them. Head subopaque, closely and finely punctured, with a delicate longitudinal sulcus on the front. Thorax shining, very closely and minutely punctured; scutellum smooth and shining. Median segment opaque, very finely shagreened, the apex shining, almost vertically truncate posteriorly; the face of the truncation finely transversely striated, with a delicate median sulcus. Abdomen smooth and shining, the apical margin of the segments broadly and feebly depressed, the apical segment triangular, the sides longer than the base, sparsely punctured. The comb on the anterior tarsi is composed of very few setæ. The third cubital cell is strongly produced towards the margin of the wing, being nearly four times as long on the cubital as on the radial nervure. The sides of the median segment are obliquely striated.

Black; the mandibles and tegulæ fuscous. Wings hyaline, faintly tinted with fuscous; nervures black.

Length 8 mm.

*Hab.* Melbourne.

Type in British Museum ex coll. Smith.

Near *T. debilis* described above, but the proportion of the joints of the antennæ is very different, and the thorax and abdomen are more polished, and the sculpture, especially on the sides of the median segment, is different.

## TACHYSPHEX NIGERRIMUS Sm.

*Tachytes nigerrimus* Sm. Cat. Hym. B. M. iv. p. 302. n. 26, 1856.

*Astata nigerrima* White; Butler, Zool. Voy. Ereb. & Terror, ii. pl. 7. fig. 14, 1875.

*Hab.* New Zealand.

I have received a specimen said to be from Victoria, but the locality may be a mistake.

Smith took the name from White's MS. referring to the above work, of which the portion containing the Hymenoptera was not published till many years later.

## TACHYSPHEX PUGNATOR, sp. n.

♀. Clypeus shining and sparsely punctured, convex, strongly depressed, and bent inwards on the apical margin, giving the appearance of a wide and shallow emargination. Antennæ

inserted almost as far from each other as from the eyes, short and rather stout; the second joint of the flagellum not much more than twice as long as the first, and about equal to the third in length but not quite as thick, the fourth and fifth joints as long as the third. Eyes separated on the vertex by a distance about equal to the length of the third and fourth joints of the flagellum combined. Head shining and almost smooth, a very delicate sulcus reaching from the anterior ocellus almost to the base of the clypeus. Posterior ocelli ovate, with a small deep depression behind them, from which a rather deep sulcus runs to the posterior margin of the head. Thorax narrower than the head, smooth and shining; the pronotum depressed below the mesonotum, gradually but not very steeply sloped; the mesonotum with a longitudinal sulcus on each side, and a very short longitudinal sulcus from the middle of the anterior margin. Median segment opaque, shorter than the mesonotum, abruptly but not quite vertically truncate posteriorly, the face of the truncation finely transversely striated, with a deep median sulcus not reaching the apex. Abdomen almost smooth, the ventral surface highly polished; the segments depressed on the apical margin, the three basal segments very strongly so and much more broadly on the middle than on the sides, the second segment obscurely transversely furrowed before the depression; the margins of the three basal segments with scant white pubescence (probably thicker in fresh specimens); the pygidial area shining and sparsely punctured, very long and narrow, almost pointed at the apex. The comb on the anterior tarsi well developed. The radial nervure reaches nearer to the outer margin of the wing than the cubital; the first recurrent nervure is received nearer to the second than to the base of the second cubital cell.

Black; the flagellum fuscous, the apex of the scape beneath fusco-ferruginous; tarsi fuscous at the base, the apical joints fusco-ferruginous; the comb of the anterior tarsi ferruginous. Wings hyaline, tinged with fuscous; nervures black.

Length 11 mm.

*Hab.* Adelaide, S. Australia.

Type in British Museum.

Somewhat allied to *T. nigerrimus* from New Zealand, but the thorax is narrower in proportion to the head, and the antennæ are very different.

#### TACHYSPHEX HYPOLEIUS Sm.

♀. Clypeus slightly convex, depressed towards the anterior margin, which is broadly subtruncate, very minutely punctured. Antennæ inserted further from each other than from the eyes, the space between them shining and almost smooth, above the shining space is a very short longitudinal carina with a very small tubercular prominence on each side of it. The first joint of the flagellum very short, not more than one-quarter of the length of the second, the second and third about equal in length, the fourth



a little shorter. Mandibles notched on the outer margin. Eyes separated on the vertex by a distance equal to the length of the second joint of the flagellum. Front slightly convex, subopaque, finely and shallowly punctured; the front below the base of the antennæ, the inner margin of the eyes as high as the ocelli and the outer margin clothed with short silvery pubescence. Posterior ocelli elongate-ovate, situated on a slight convexity, with a shallow depression on the vertex behind them. Thorax smooth and shining, mesopleuræ subopaque; mesosternum shining, with a few scattered punctures; the pronotum depressed below the mesonotum, very gradually sloped. Median segment distinctly longer than the mesonotum, opaque and shagreened, with a very shallow longitudinal depression near the apex, vertically truncate posteriorly; the face of the truncation transversely striated, with a deep median sulcus. Abdomen shining and almost smooth, the apical margin of the segments depressed, with a band of short silver pubescence broadly interrupted in the middle; the first segment rounded towards the base; the pygidial area very sparsely punctured, very slightly convex in the middle, elongate, blunt at the apex. Intermediate coxæ very widely separated; the comb of the anterior tarsi very strongly developed. The first recurrent nervure is received rather nearer to the base of the second cubital cell than to the second recurrent nervure, which is received close to the middle of the cell; the third cubital cell is produced, reaching on the cubital nervure much more than halfway from the apex of the second cell to the margin of the wing.

Entirely black. Wings hyaline, tinted with fuscous, nervures black.

Length 14 mm., exp. 22 mm.

*Hab.* S. Australia; W. Australia.

Type in British Museum.

The median segment, although broader than long, is longer than is usual in the genus.

#### ZOYPHIUM ERYTHROSOMA, sp. n.

♀. Mandibles very deeply notched on the outer margin. Clypeus broad, slightly convex in the middle, the anterior margin depressed transversely, with two minute teeth on each side, almost smooth, with thin and very fine silvery pubescence on the sides. Antennæ inserted about half as far again from each other as from the eyes, scarcely longer than the head, gradually thickened to the apex, the length of the scape no greater than the distance between the antennæ; the first joint of the flagellum globose, a little shorter than the second, the third half as long again as the second, the fourth a little longer than the third, the apical joint very large and massive, as long as the first and second combined. The inner margin of the eyes almost straight, the distance between the eyes on the vertex slightly exceeding two-thirds of the length of the flagellum. The posterior ocelli rather more than half as far again from each other as from the

eyes. Front depressed round the base of the antennæ; head a little broader than the mesonotum. Head and thorax opaque, very closely and microscopically punctured. Pronotum depressed, seen from above linear and transverse, sharply obliquely depressed anteriorly. Mesonotum much longer than the median segment, the punctures on the mesopleuræ a little more distinct than on the mesonotum. Median segment rounded, with a median longitudinal sulcus from the base to the apex, a short carina lying in the sulcus at the base; along the base of the segment are a number of short oblique striæ. Abdomen a little longer than the thorax and median segment combined, closely and minutely punctured, the apical margin of the segments broadly depressed and smooth. The pygidial area is triangular, much more strongly punctured, with short, stiff hairs springing from the punctures. The first recurrent nervure is received at one-quarter before the apex of the first cubital cell, otherwise the neururation is as in Kohl's figure.

Obscure blackish blue; the clypeus, the base of the mandibles, the scape of the antennæ, the apex of the femora, the tibiæ, and the tarsi yellow; the flagellum, the abdomen, and stains on the tibiæ and tarsi light ferruginous; the tegulæ fuscous. Wings hyaline, faintly iridescent, nervures ferruginous.

Length 8-9 mm.

♂. Clypeus blue-black; hypopygium pointed, with a spine on each side close to the apex. Otherwise as in the female.

Length 7 mm.

*Hab.* Townsville, Queensland (*Dodd*); Mackay, Queensland (*Turner*); February and March.

Described from two males and two females.

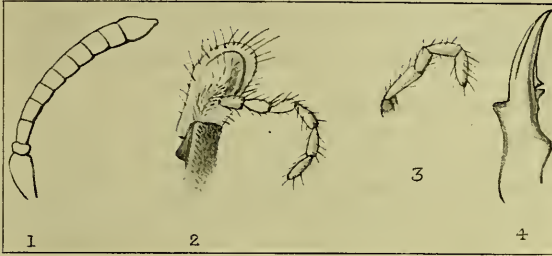
Near *Sericophorus bicolor* Sm., from W. Australia, but the radial cell in that species is appendiculate and the head much broader.

*ZOYPHIUM RUFONIGRUM*, sp. n. (Plate XXVI. fig. 8.)

♂. Mandibles deeply notched on the outer margin, acute at the apex, not bidentate. Clypeus very broadly rounded at the apex, the apical margin depressed, without minute lateral teeth. Antennæ about one-third as far again from each other at the base as from the eyes, the first joint of the flagellum shorter than the second, globular, the second shorter than the third, the apical joint massive and longer than the others, the antennæ are a little longer than head and are gradually thickened to the apex. The inner orbits of the eyes are nearly parallel, very slightly convergent towards the vertex. The eyes on the vertex separated by a distance scarcely equal to two-thirds of the length of the flagellum; the posterior ocelli twice as far from each other as from the eyes. Head and thorax minutely and closely punctured, the front clothed with short, silvery pubescence. Head broader than the thorax; the pronotum short but not linear, strongly depressed anteriorly. Mesopleuræ rather more strongly punctured

than the mesonotum. The median segment rounded at the apex, with a deep median sulcus; the sides of the segment and the mesopleuræ clothed with silvery pubescence. Abdomen minutely punctured, the apical margins of the segments rather broadly depressed and smooth; the hypopygium subtruncate, with a minute apical spine.

Text-fig. 108.



*Zoyphium rufonigrum*, ♂.

1. Antenna. 2. Maxilla and palpus. 3. Labial palpus. 4. Mandible.

Black; the mandibles, clypeus, pro- and mesothorax, and median segment ferruginous red; the tibiæ, tarsi, scape of the antennæ, the first and part of the apical joint of the flagellum testaceous yellow. Wings hyaline, iridescent, nervures fuscous.

Length 4 mm.

*Hab.* Port Darwin (*Turner*); December.

Described from two specimens.

*ZOYPHIUM KOHLII*, sp. n.

♀. Mandibles acute at the apex, deeply notched on the outer margin at one-third from the base, with two small teeth narrowly divided from each other on the inner margin also at one-third from the base. Clypeus short and broad, opaque and smooth, the anterior margin transversely depressed, with a tooth on each side opposite the two small teeth on the mandibles. Antennæ nearly half as far again from each other at the base as from the eyes, gradually thickened to the apex; the first joint of the flagellum globular, shorter and stouter than the second, the second a little longer than the third, the apical joint large and longer than any two of the others combined. Eyes moderately convergent towards the vertex, where they are separated by a distance equal to about half the length of the flagellum; the posterior ocelli nearly twice as far from each other as from the eyes. Head and thorax opaque, almost smooth, the front covered with very short golden pubescence. Pronotum much narrower than the head, depressed slightly below the level of the mesonotum and strongly depressed anteriorly. Median segment shorter than the mesonotum,

rounded posteriorly, with a median carina lying in a shallow depression reaching from the base almost to the apex, with very short oblique striæ at the base, shining at the apex, the inter-mediate space opaque. Abdomen elongate-ovate, minutely and rather sparsely punctured, the apical margin of the segments narrowly depressed, the pygidial area triangular with sparse pubescence.

Black; the mandibles, antennæ, tegulæ, and legs pale ferruginous brown. Wings hyaline, iridescent; nervures fuscous.

Length 6 mm.

*Hab.* Mackay, Queensland (*Turner*); January.

ZOYPHIUM FRONTALE, sp. n.

♀. Clypeus very broad, truncate at the apex; the antennæ inserted at the base of the clypeus, twice as far from each other as from the eyes, thickened to the apex and no longer than the head. Eyes very slightly convergent towards the vertex; the posterior ocelli more than twice as far from each other as from the eyes. Front very broad, slightly concave at the sides, a little elevated in the middle. Head, thorax, and abdomen very minutely punctured, the abdomen shining. Pronotum short, narrower than the head, and depressed below the mesonotum. Mesonotum large, as broad as long and as broad as the head. Median segment rounded at the sides, abruptly truncate posteriorly, much shorter than the mesonotum, delicately obliquely striated, with a median carina from the base situated in a depressed sulcus. Abdomen subconical, the second segment a little broader than the first.

Black; the clypeus, the front and the scape of the antennæ yellow; the mandibles, flagellum, tegulæ, and legs ferruginous; the apex of the scutellum and the postscutellum fusco-ferruginous. Wings hyaline, iridescent; nervures fusco-ferruginous.

There are only two cubital cells, the second transverse cubital nervure being obsolete; the second cubital cell nearly twice as long on the cubital as on the radial nervure, the length on the radial about equal to the length of the first transverse cubital nervure.

Length 5 mm.

*Hab.* Mackay, Queensland (*Turner*); March.

GORYTES DUBOULAYI, sp. n.

♀. Clypeus short and broad, closely and minutely punctured. Head very minutely punctured, the front almost smooth, concave, with a longitudinal sulcus from the anterior ocellus to the base of the clypeus. Eyes very large, diverging towards the clypeus and the vertex; the posterior ocelli twice as far from each other as from the eyes. Antennæ inserted further from each other than from the eyes, thickened to the apex; the second joint of the flagellum half as long again as the third. Pronotum linear, transverse, nearly as broad as the head. Thorax very minutely and shallowly punctured; the mesonotum half as broad again as



long. Median segment with a smooth, shining triangular space at the base; from the apex of the triangle a deep sulcus runs to the apex of the segment, the remainder of the segment shining, with microscopic punctures. Abdomen oval, as long as the thorax and median segment combined; the first segment narrow at the base, no longer than the second segment which is very broad; all the segments finely and very closely punctured; the pygidium elongate-triangular, with sparse, short pubescence.

Black; the mandibles at the base, clypeus, scape of the antennæ, pronotum, tegulæ, a spot on the mesopleuræ beneath the anterior wings, a short transverse line at the apex of the scutellum, the postscutellum, a large spot on each side of the second abdominal segment, a transverse band very narrowly interrupted in the middle at the apex of the fourth segment, the apex of the anterior femora, and a line on all the tibiæ above, pale yellow; the flagellum, the apex of the mandibles, the legs, the first abdominal segment (except at the base), and the two apical segments ferruginous.

The first recurrent nervure is received near the apex of the first cubital cell, the second close to the apex of the second. The first cubital cell is longer on the cubital nervure than the second and third combined; the second as long as the third, but much shorter on the radial nervure.

Length 7 mm.

*Hab.* Australia, N.W. Coast (*Du Boulay*).

Type in British Museum.

This and the two following species form a group of allied forms approaching the subgenus *Miscothyris* Sm., from which they may be distinguished by the shorter and more oval abdomen and the very large and broad second abdominal segment.

*GORYTES SANGUINOLENTUS*, sp. n. (Plate XXVI. fig. 10.)

♀. Clypeus broad, slightly convex, about two and a half times as broad on the apical margin as long, truncate at the apex, the labrum slightly prominent; minutely punctured. Eyes large, strongly divergent towards the clypeus and towards the vertex, separated on the front by a distance rather less than one and a half times the length of the scape. The posterior ocelli twice as far from each other as from the eyes, separated from the eyes by a distance about equal to the length of the third joint of the flagellum. Antennæ inserted on the front, above the base of the clypeus, about equal in length to the head, nearer to the eyes than to each other; the scape as long as the first three joints of the flagellum combined; the second joint of the flagellum longer than the third, the apical joints thickened. Head opaque, very minutely punctured, vertex flattened. Pronotum linear and transverse, nearly two-thirds of the breadth of the head; mesonotum more than half as broad again as long, finely punctured; scutellum large and broad, truncate at the apex. Median segment of about the same length as the scutellum, rounded

and steeply sloped posteriorly, the sides finely and not very closely punctured; a smooth, shining, triangular area at the base, produced at the apex of the triangle into a narrow shining median line on the posterior slope. Abdomen ovate, closely and finely punctured, the second segment the broadest and half as long again as the third; the first segment steeply sloped anteriorly, not truncate, about half as long as the second; the apical segment small and pointed, with a fine longitudinal carina.

Black; the base of the mandibles, the clypeus, the scape of the antennæ, pronotum, a spot on the mesopleuræ near the base of the anterior wings, the base of the tegulæ, the tibiæ above, and an obscure spot on each side near the apical angles of the second abdominal segment, pale yellow; the flagellum, the tibiæ beneath, the tarsi, and the abdomen ferruginous. Wings hyaline, iridescent; nervures ferruginous at the base and on the costa, black at the apex.

The first recurrent nervure is received near the apex of the first cubital cell, the second at the apex of the second cubital cell, almost interstitial with the second transverse cubital nervure. The second cubital cell is of about the same length as the third on the cubital nervure, less than half as long on the radial as on the cubital nervure. The cubital nervure on the hind wing originates far beyond the apex of the submedian cell.

Length 7 mm., exp. 12 mm.

*Hab.* Mackay, Queensland (*Turner*); March.

This is nearer to *Misothyris* than to any other section of *Gorytes*, but differs much from *thoracicus* Sm., the antennæ being shorter, the second joint of the flagellum not unusually elongate; the eyes much more strongly divergent; the first abdominal segment narrower and not truncate, the second segment much larger and the apical segment pointed, not broadly subtruncate as in *thoracicus*. Smith describes *thoracicus* as a male, but the type, the only specimen I have seen, is a female and has the antennæ twelve-jointed, not thirteen-jointed as in Smith's figure.

GORYTES LUCIDULUS, sp. n. (Plate XXVI. fig. 11.)

♀. Clypeus very broad, truncate anteriorly, finely and closely punctured. Antennæ inserted above the base of the clypeus, nearer to the eyes than to each other, about as long as the thorax; the scape as long as the first two joints of the flagellum combined, the second joint of the flagellum much longer than the third. Eyes diverging towards the clypeus and towards the vertex; the posterior ocelli further from each other than from the anterior ocellus and twice as far from each other as from the eyes. Head shining, almost smooth, with a delicate sulcus from between the antennæ to the anterior ocellus. Pronotum almost vertically depressed, the posterior margin nearly on a level with the mesonotum. Mesonotum half as broad again as long, finely and closely punctured; scutellum short and transverse. Median segment very short, steeply sloped, with a deep median sulcus posteriorly, shining with a smooth triangular space at the base,

the sides and apex very finely punctured. Abdomen subovate, scarcely longer than the thorax and median segment combined, the second segment the broadest, the apical segment lanceolate. The first recurrent nervure is received by the first cubital cell a little before the apex, the second is interstitial with the second transverse cubital nervure. The second cubital cell is scarcely more than half the length of the third, the first is longer than the second and third combined. The second on the radial nervure is a little more than half as long as on the cubital.

Black; the clypeus, the scape of the antennæ, a large spot on the mesopleuræ beneath the anterior wings, the scutellum, post-scutellum, and a spot on each side near the apical angles of the second abdominal segment yellow. The tarsi and anterior tibiae fuscous. Wings hyaline, nervures fusco-ferruginous.

Length 8 mm., exp. 13 mm.

*Hab.* Mackay, Queensland (*Turner*); October.

The intermediate tibiae have two spines at the apex; the tarsal ungues are long, curved, and simple. The form is very similar to *sanguinolentus*, but the scutellum is shorter and the whole insect less robust.

A colour variety from Cairns is without the yellow spot on the second abdominal segment and has the apical half of the clypeus dark brown.

#### GORYTES ICARIOIDES, sp. n.

♀. Clypeus broadly truncate at the apex, subtriangular, but truncate at the base, almost smooth. Eyes very large, diverging towards the vertex, approaching each other most closely at the base of the clypeus, where they are separated by a distance about equal to the length of the scape of the antenna. Antennæ inserted rather high up on the front, as near to the eyes as to each other; the second joint of the flagellum nearly half as long again as the third and quite as long as the scape, the four or five apical joints forming a strong club, the joints broader than long. The posterior ocelli far apart, two and a half times as far from each other as from the eyes, from which they are separated by a distance equal to the length of the first joint of the flagellum. Head opaque, the space round the ocelli rather coarsely punctured. Thorax and median segment closely punctured; the pronotum depressed below the level of the mesonotum, the posterior angles widely separated from the tegulæ. Median segment as long as the mesonotum, truncate at the apex, with a longitudinal carina on the surface of the truncation, the triangular area at the base of the segment rather obscurely defined and very finely rugose. Abdomen petiolate, the first segment half as broad again at the apex as at the base, and nearly twice as long as the breadth at the apex; second and third segments large and broad; the whole abdomen rather closely punctured and opaque; the apical margin of the first segment smooth and shining, with sparse punctures. Pygidial area triangular, with the margins slightly raised, covered

with short, stiff pubescence. Both recurrent nervures are received by the second cubital cell beyond the middle, the second near the apex. The radial cell is narrow and pointed; the first cubital cell incompletely divided by a branch from the first transverse cubital nervure, the second three times as long on the cubital as on the radial nervure, the third nearly as long as the first on the cubital and more than half as long again on the cubital as on the radial nervure. The cubital nervure of the posterior wing originates before the apex of the submedian cell. The posterior tarsi are nearly twice as long as the tibiæ.

Black; the clypeus, the front below the base of the antennæ, the scape of the antennæ, and the posterior angles of the pronotum yellow; the mandibles, the four basal joints of the flagellum, the tegulæ and a curved line above them, a transverse spot on the postscutellum, the apex of the first and third abdominal segments rather broadly and of the fourth and fifth more narrowly, and the legs (except the coxæ and the posterior femora) ferruginous. Wings hyaline; nervures black, ferruginous at the base.

Length 10 mm., exp. 19 mm.

*Hab.* Mackay, Queensland (*Turner*).

Nearest to *G. decoratus* Handl. (*ornatus* Sm.), from West Australia.

#### GORYTES CYGNORUM, sp. n.

♂. Clypeus broadly subtruncate at the apex, clothed with silvery pubescence. Head finely and rather sparsely punctured, with a delicate sulcus from the anterior ocellus nearly reaching the base of the clypeus. Eyes strongly divergent towards the vertex, less strongly towards the clypeus, separated from each other on the front at the nearest point by a distance about equal to the length of the scape and the first joint of the flagellum combined; the posterior ocelli about half as far again from each other as from the eyes. Antennæ shorter than the thorax and median segment combined, moderately and very gradually thickened to the apex, much nearer to the eyes than to each other. Pronotum transverse and linear, slightly raised, and as broad as the head. Thorax rather sparsely punctured; the postscutellum coarsely longitudinally striated. Median segment much shorter than the mesonotum, almost vertically truncate posteriorly, rugose, with a median sulcus on the truncation, the area at the base coarsely longitudinally striated. Abdomen elongate-ovate, very finely and closely punctured; the first segment of about the same length as the second, broadened to the apex, where it is more than half as broad as the second segment. Both recurrent nervures received by the second cubital cell, the distance between them nearly two-thirds of the length of the cell. The second cubital cell is as long on the cubital nervure as the third, but is much narrowed on the radial nervure; the cubital nervure is sharply bent before the reception of the first recurrent nervure and has from that point the appearance of being continuous with the



recurrent rather than with the cubital nervure. The cubital nervure of the posterior wing originates far beyond the apex of the submedian cell.

Black; the clypeus pale yellow; the mandibles, the scape of the antennæ, the two basal joints of the flagellum, the pronotum, tegulæ, scutellum, legs, the apical half of the first and second abdominal segments, the apical margins of the remaining segments (most broadly on the fifth), the second ventral segment (except the extreme base), and the apical margin of the remaining segments (except the first) orange. Wings hyaline, iridescent, slightly tinged with fuscous; nervures fusco-ferruginous.

Length 7 mm.

*Hab.* Swan River (*Du Boulay*).

Type in British Museum.

#### GORYTES FRENCHII, sp. n.

♂. Clypeus slightly emarginate in the middle of the apical margin, about twice as broad at the apex as long, minutely punctured and thinly clothed with silver-grey pubescence. Head delicately and closely punctured, with a fine sulcus from the anterior ocellus nearly reaching the base of the clypeus. Eyes strongly divergent towards the vertex and less strongly towards the clypeus, separated at the base of the clypeus by a distance not exceeding the length of the scape; the posterior ocelli rather more than half as far again from each other as from the eyes. Antennæ rather shorter than the thorax and median segment combined, slightly thickened towards the apex; the second joint of the flagellum twice as long as the first, and half as long again as the third. Pronotum transverse and linear; thorax as broad as the head, sparsely punctured; scutellum transverse. Median segment short and rounded, the sides coarsely obliquely striated, the triangular dorsal area coarsely longitudinally striated. Abdomen subopaque, very minutely and closely punctured, more than half as long again as the thorax and median segment combined, the first segment half as broad at the apex as the second segment and slightly constricted, the third segment nearly as long as the second; the hypopygium pointed. Both recurrent nervures received by the second cubital cell, separated from each other by nearly two-thirds of the length of the cell; the first transverse cubital nervure sends out a short obscure branch into the first cubital cell; the second cubital cell is longer than the third on the cubital nervure and is incompletely separated from it, the second transverse cubital nervure only reaching a little more than halfway to the radial nervure. The cubital nervure of the posterior wing originates beyond the apex of the submedian cell.

Black; the extreme apex of the scape of the antennæ, the pronotum, a rather narrow band at the apex of the first, second, fourth, fifth, and sixth dorsal abdominal segments, very narrowly interrupted on the first and fourth, yellow; the tegulæ, tibiæ,

tarsi, and the extreme apex of the femora ferruginous. Wings hyaline, nervures black.

Length 10 mm.

*Hab.* Victoria (*French*).

Type in British Museum.

Belongs to the *mystaceus* group.

#### BEMBEX VARIABILIS Sm.

*Bembex variabilis* Sm. Cat. Hym. B. M. iv. p. 325, n. 39, 1856, ♀.

*Bembex crabroniformis* Sm. Ann. Mag. Nat. Hist. xii. p. 296, 1873, ♂.

Var. *Bembex raptor* Sm. Cat. Hym. B. M. iv. p. 326. n. 40, 1856, ♂.

I have not been able to dissect a male of *B. raptor*, but cannot find any perceptible difference in structure between it and *variabilis*. The colour-differences are not reliable, though to a certain extent, at all events, local. The variety *raptor* occurs at Roeburne, W. Australia, and in various localities in Central Australia; the abdominal fasciæ are continuous, not interrupted as in the typical form, which occurs along the Eastern Coast and at Port Darwin. The second joint of the flagellum in the male is a little shorter in var. *raptor* than in the typical form.

#### BEMBEX FLAVIPES Sm.

♂. Colour as in the female, the clypeus white, black at the base. Clypeus very prominent from the base, then vertically and broadly semicircularly truncate and subconcave. The penultimate joint of the flagellum is strongly produced beneath at the apex, the apical joint strongly hooked and pointed. Anterior tarsi normal, intermediate femora not serrate. Second ventral segment carinate longitudinally, the carina produced into a large compressed tubercle, truncate broadly at the apex; the sixth segment with a black triangular plate, pointed at the apex.

*Hab.* Mackay, Queensland (*Turner*).

#### BEMBEX LITTORALIS, sp. n.

♂. Clypeus moderately convex, clothed with very short pubescence, which only shows in strong lights, in which it is silver; shining and finely punctured. Mandibles tridentate, the two inner teeth very small, the labrum normal. Antennæ inserted a little further from each other than from the eyes, the front between them slightly raised; the last joint of the flagellum slightly curved, the second joint fully half as long again as the third. Cheeks very narrow; the head finely punctured, with sparse, long, grey pubescence. Thorax and abdomen finely and closely punctured; the apical dorsal segment of the abdomen broadly rounded and more sparsely punctured; the second ventral segment rather coarsely punctured, with a prominent, compressed, curved tubercle, pointed at the apex; the sixth segment with a

raised triangular plate, pointed at the apex, the seventh with a longitudinal median carina; the eighth segment terminating in a short spine. Anterior tarsi simple, the basal joint with six slender spines on the outer margin; the intermediate tibiae not serrate.

Black; the mandibles (except at the apex), the labrum, the extreme base of the scape, the flagellum beneath, a spot on each side on the front below the anterior ocellus, the posterior margin of the pronotum very narrowly, the tegulae, the tibiae and tarsi beneath, and the femora beneath at the apex, testaceous brown; a narrow transverse band, broadly interrupted in the middle, on abdominal segments 2-5 pale olivaceous grey. Wings hyaline, nervures black.

Length 13 mm.

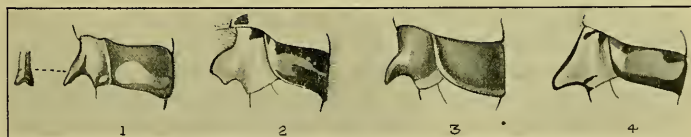
*Hab.* Port Darwin (*Turner*); December.

Allied to *B. musca* Handl., and also to *B. atrifrons* Sm., of which it may possibly prove to be the male, but the species in the group are very closely allied, and *atrifrons* will probably prove to be distinct.

#### BEMBEX TUBERCULIVENTRIS, sp. n.

♂. Eyes slightly divergent towards the clypeus. The clypeus strongly convex at the base, very prominent at about one-third from the base, thence almost vertically depressed to the apex, shining and very sparsely punctured. Antennae inserted as far from each other as from the eyes, the front between them with a low longitudinal carina; the seventh joint of the flagellum very

Text-fig. 109.



*Bembex*, ♂ : second ventral segment.

1. *B. furcata* Erichs. 2. *B. tuberculiventris*. 3. *B. littoralis*.  
4. *B. palmata* Sm.

feebly prominent at the base beneath. Mandibles tridentate, the intermediate tooth very small and short. Head finely punctured and clothed with long grey pubescence. Thorax and abdomen very finely and closely punctured, the punctures on the ventral segments larger and shallow; second ventral segment longitudinally carinate, the carina produced downwards into a large, compressed prominence, curved anteriorly and truncate broadly at the apex; the sixth segment with a flattened triangular plate, prominent and bluntly pointed at the apex; the seventh segment

tricarinate longitudinally, broadened towards the apex; the eighth segment very small and pointed. Anterior tarsi normal, the basal joint with eight long and rather slender spines on the outer margin; the intermediate tibiae not serrate. Third cubital cell broader at the apex than at the base, longer than the second. The apical dorsal segment of the abdomen is broadly rounded at the apex.

Black; the mandibles (except at the apex), the labrum, the clypeus (except a broad transverse mark at the base), the outer orbits of the eyes narrowing to nearly the summit, the inner orbits more broadly, not reaching to the summit, a median line on the front broadening between and round the base of the antennae, with a spot on each side of it at its base, the posterior margin and the sides of the pronotum, with a large black spot close to the posterior angles and a smaller one before it, a spot on the mesopleurae below the anterior wings with a large curved mark below it, the ventral segments of the abdomen (except the base of the fifth and sixth segments and a black spot on each side of the first and of the second at the base), the prosternum, the legs (except the tarsal ungues, a black line at the base of all the tibiae and on the anterior and posterior femora), pale yellow. A narrow transverse band interrupted in the middle and on the sides on the first abdominal segment, a broader band (curved and narrowly interrupted in the middle) on segments 2-6, and the sides of the apical segment narrowly pale, dull, greenish grey. Wings hyaline; nervures black, ferruginous at the base. Antennae yellow beneath.

Length 13 mm., exp. 22 mm.

*Hab.* Cooktown, Queensland (*Turner*); October.

Allied to *B. musca* Handl., but has the clypeus more prominent and more spines on the anterior tarsi.

#### BEMBEX PALMATA Sm.

*Bembex palmata* Sm. Cat. Hym. B. M. iv. p. 325. n. 38, 1856, ♂; Handlirsch, Sitz. Akad. Wiss. Wien, cii. p. 751, n. 28, 1893, ♂ ♀.

*Bembex tridentifera* Sm. Ann. & Mag. Nat. Hist. (4) xii. p. 298, 1873, ♀.

*Hab.* Mackay and Cairns, Queensland (*Turner*).

#### BEMBEX PECTINIPES Handl.

*Bembex pectinipes* Handl. Sitz. Akad. Wiss. Wien, cii. p. 875. n. 108, 1893, ♀.

*Bembex palmata* Sm. Ann. & Mag. Nat. Hist. (4) xii. p. 298, 1873, ♂ (nec Smith, 1856).

This is not identical with *B. saussurei* Handl., in my opinion. As in true *palmata*, the labrum has no median longitudinal sulcus at the base, but the anterior tarsi of the female have twelve spines on the outer sides of the first joints and the mandibles are tridentate. In the male the basal joints of the anterior tarsi are



very broad, with eighteen long spines on the outer margins, the second joints produced into a broad lobe on the outer margins, but the third and fourth not so. The sixth joint of the flagellum is produced beneath at the apex and the seventh at the base, the latter very gradually narrowed towards the apex with an emargination in the middle. The second ventral segment is longitudinally carinate with a tubercle at the apex, less strongly produced than in *flavifrons* Sm. The intermediate femora are not toothed, and the epipygium is truncate at the apex.

*Hab.* Port Darwin (*Walker*).

*BEMBEX FLAVIFRONS* Sm.

*Bembex flavifrons* Sm. Cat. Hym. B. M. iv. p. 324. n. 36, 1856, ♀.

*Bembex saussurei* Handl. Sitz. Akad. Wiss. Wien, cii. p. 873. n. 107, 1893, ♀.

This may be distinguished from *pectinipes* Handl. by the longitudinal grooves on the sides of the clypeus, feebly continued on the labrum, and by a short median longitudinal sulcus at the base of the labrum.

♂. The clypeus is very deeply longitudinally grooved on the sides, the grooves strongly continued on the labrum, which also has a deep, median, longitudinal sulcus near the base. The antennæ have the sixth joint of the flagellum strongly produced beneath at the apex and the seventh at the base. The anterior tarsi have the first joints strongly broadened and flattened, with sixteen long spines on the outer margin, the following joints are not strongly lobed. The intermediate femora are distinctly serrated. The second ventral segment is very strongly longitudinally carinated beneath, the carina produced at the apex into a very prominent tubercle, more strongly developed than in *pectinipes*. The markings on the disc of the thorax are almost obsolete, the band on the first abdominal segment very broadly, on the other segments very narrowly interrupted. Epipygium narrowly truncate at the apex.

*Hab.* Mackay, Queensland (*Turner*).

*NYSSON* (*ACANTHOSTETHUS*) *PUNCTATISSIMUS*, sp. n. (Plate XXVI. fig. 9.)

♀. Clypeus broadly truncate at the apex, the apical margin narrowly transversely depressed, the angles very feebly produced; sparsely and rather deeply punctured, without carinæ, short and broad. Antennæ inserted nearly half as far again from the eyes as from each other; the scape as long as the first two joints of the flagellum combined, the second joint half as long again as the first and about the same length as the third, the fourth joint longer and thicker, the apical joint nearly twice as long as the second. Eyes separated at the base of the clypeus by a distance equal to about one-third of the length of the antennæ, strongly divergent towards the vertex and broadly and shallowly emarginate on

the inner margin near the summit. The posterior ocelli a little further from the eyes than from each other, and half as far again from each other as from the anterior ocellus. Head rather closely, but not very deeply punctured, the punctures large. A short longitudinal carina on the front reaching from between the base of the antennæ much less than halfway to the anterior ocellus, forked above, the branches reaching nearly halfway to the eyes. Thorax coarsely punctured; the pronotum short and steeply sloped anteriorly, very broadly emarginate posteriorly; prosternum produced posteriorly into two broad projections pointed at the extremity and overlying the anterior coxæ; mesosternum punctured, mesopleuræ coarsely punctured-rugose, the intermediate coxæ broadly, the posterior coxæ narrowly separated. Scutellum subrectangular, laterally produced at the anterior angles, half as broad again as long; postscutellum very short and divided at distant intervals by longitudinal carinæ. Median segment a little shorter than the scutellum, strongly produced at the posterior angles into stout spines, strongly punctured; the enclosed space bordered by strongly raised carinæ, converging towards the apex, marked with about six rather lower longitudinal carinæ; vertically truncate posteriorly, the face of the truncation with several longitudinal carinæ. First abdominal segment rather longer than the second, rounded broadly anteriorly and strongly punctured, the second segment less deeply punctured, the punctures on the remaining segments finer and very shallow. Pygidial area granulated, broadly subtriangular, rather narrowly truncate at the apex. First ventral segment with a strong median carina, broadly emarginate at the apex and much shorter than the second segment, which is coarsely but sparsely punctured, the remaining segments finely punctured. The posterior tibiæ are serrate from near the base, emarginate on the outer margin, and smooth near the apex.

Black; the clypeus covered with very short silvery pubescence; the front and orbits of the eyes, pronotum, mesopleuræ, and scutellum with very short pale golden pubescence; the mesonotum with silvery pubescence; the sides of the median segment outside the enclosed space with very pale golden pubescence; the vertex, mesonotum, and median segment dark blackish brown; the apical margins of the abdominal segments above, most broadly at the sides, luteous yellow, the base of the first segment with a large rounded spot of very short golden pubescence on each side; the legs, mandibles, antennæ, tegulæ, and the apex of the pygidium ferruginous. Wings hyaline, slightly iridescent; nervures black.

There are only two cubital cells; the second is pointed on the radial nervure; the first recurrent nervure is received at about one-sixth from the apex of the first cubital cell, the second close to the apex, almost interstitial with the first transverse cubital nervure. The angles of the ventral segments are not spined.

Length 9 mm.

*Hab.* Mackay, Queensland (*Turner*); February.

NYSSON (*ACANTHOTHETHUS*) SPINIGER, sp. n.

♀. Clypeus depressed to the apex, and broadly but shallowly emarginate anteriorly, clothed with very short silvery pubescence. Antennæ inserted a little further from each other than from the eyes; the three apical joints of the flagellum much thickened, the apical joint twice as long as the second, which is longer than the third. Eyes separated from each other at the base of the clypeus by a distance equal to about two-fifths of the length of the antennæ, strongly divergent towards the vertex, but not emarginate; the posterior ocelli half as far again from the eyes as from each other. Head strongly and very closely punctured; an indistinct, very short, longitudinal carina between the antennæ; the front and pronotum with very short and sparse white pubescence. Thorax punctured-rugose; the pronotum short, gradually sloped, the anterior angles prominent; the mesopleuræ strongly and closely, the mesosternum feebly and sparsely punctured. Scutellum subrectangular, very little broader than long. Median segment very short, in the middle only about half as long as the scutellum; the posterior angles strongly produced, ending in an acute spine directed outwards and backwards, the enclosed space with convergent lateral carinæ and marked with about six longitudinal carinæ; vertically truncate posteriorly, with several longitudinal carinæ on the surface of the truncation; the sides of the segment finely and sparsely punctured, the dorsal surface outside the enclosed area clothed with silvery pubescence. Abdomen closely punctured; the first segment longer than the second, subtruncate at the base, and more strongly punctured than the second segment; the pygidial area granulate, subtriangular, and narrowly truncate at the apex. The first ventral segment with a very strong median carina and a long spine on each side at the apical angles; the second segment much longer than the first and strongly punctured. Posterior tibiæ almost unarmed, slightly emarginate near the apex.

Black; the mandibles, the basal third of the antennæ, the tegulæ, the legs, the basal segment of the abdomen, the apical margin of the remaining segments obscurely, and the sides and ventral surface of the pygidium, dark ferruginous; a short, obscure, transverse band on the sides of the first and second abdominal segments yellow. Wings hyaline, nervures black.

The second cubital cell is almost petiolate, the first recurrent nervure is received by the first cubital cell at about one-fifth from the apex, the second close to the apex, almost interstitial with the first transverse cubital nervure. The anal cell of the hind wing is short.

♂. As in the female, but without the spine at the angles of the first ventral segment, and the apical segment is widely emarginate at the apex.

Length 5 mm.

*Hab.* Mackay, Queensland (*Turner*); October.

## NITELA KURANDÆ, sp. n.

♀. Clypeus strongly convex, with an elevated carina from the base to the apex finely continued on the front, and reaching halfway from the base of the clypeus to the anterior ocellus. Eyes more strongly convergent towards the vertex than in other species of the genus; the posterior ocelli very close to the eyes, fully twice as far from each other as from the eyes. Head opaque, the vertex almost smooth, the front very minutely and closely punctured-striate. Pronotum much narrower than the head, the anterior and posterior margins raised, the short space between indistinctly transversely striated, the tubercles at the posterior angles reach back to the tegule. Mesonotum and scutellum opaque. Median segment longer than the mesonotum, narrowed towards the apex and vertically truncate posteriorly, coarsely reticulate, with a faint median carina; the face of the truncation transversely striated. Abdomen smooth and shining, the second segment slightly transversely depressed at the base, the apical segment compressed and pointed.

Black; the scape of the antennæ, the basal half of the flagellum, the mandibles, the tegule, and the legs pale ferruginous. Wings hyaline, iridescent; nervures testaceous. The recurrent nervure is almost interstitial with the transverse cubital nervure.

Length 5 mm.

*Hab.* Cairns, Queensland (*Turner*); January.

## NITELA RETICULATA, sp. n.

♀. Clypeus strongly convex, with an elevated carina from the base to the apex, shining and very minutely punctured. Front rugose, vertex almost smooth with a few indistinct transverse striæ; the eyes moderately convergent towards the vertex, the posterior ocelli about half as far again from each other as from the eyes; a delicate carina from the anterior ocellus not reaching the base of the clypeus. Pronotum short and transverse, much narrower than the head, the anterior and posterior margins strongly raised, the short intervening space strongly rugose and divided in the middle by a carina. Mesonotum coarsely rugose, irregularly transversely striated anteriorly, with an indistinct carina from the middle to the posterior margin. Median segment longer than the mesonotum, narrowed towards the apex and vertically truncate posteriorly, longitudinally striated, the space between the striæ very coarsely punctured, giving an appearance of coarse reticulation. Abdomen smooth and shining, shorter than the thorax and median segment combined; the first segment long, truncate at the base, the second segment strongly depressed at the base, the apical segment pointed.

Black; the mandibles, the antennæ, except the four apical joints which are fuscous, the tegule and the legs ferruginous. Wings hyaline, nervures pale ferruginous. The recurrent nervure is interstitial with the transverse cubital nervure.



Length 5 mm.

*Hab.* Mackay, Queensland (*Turner*); May.

The antennæ are inserted very low down close to the sides of the clypeus. The tubercles at the posterior angles of the pronotum do not reach the tegulæ, differing in this point from typical *Nitela*.

PISON SCABRUM, sp. n.

♀. Clypeus rather more than twice as broad as long; the anterior margin broadly rounded, narrowly and bluntly produced in the middle, closely punctured and clothed with long greyish pubescence, changing to silver in strong lights. Antennæ inserted about as far from each other as from the eyes, as long as the thorax and median segment combined, very slightly thickened to the seventh joint of the flagellum; the second joint of the flagellum three times as long as the first and one-third longer than the third. Eyes deeply emarginate, the distance between them on the vertex slightly exceeding the length of the two basal joints of the flagellum combined, the distance between them at the base of the mandibles nearly half as great again as on the vertex. Posterior ocelli nearly half as far again from the eyes as from each other, a little nearer to each other than to the anterior ocellus. Head closely and rather finely punctured, thinly clothed with cinereous pubescence; a short, longitudinal, median carina on the front above the base of the antennæ. Pronotum very short, depressed below the level of the mesonotum. Thorax shining, closely punctured, with an obscure longitudinal carina on the scutellum. Median segment not more than two-thirds of the length of the mesonotum, punctured-rugose, without a median carina, with a small shining spot at the apex, truncate posteriorly, with a median sulcus not reaching the apex, and with a few transverse striæ at the apex. Abdomen very minutely and closely punctured, the third segment as long as the second, the apical margin of the segments depressed, with a band of silvery pubescence, the apical segment elongate and very sharply pointed.

Black; the tegulæ, the apical margin of the fifth abdominal segment, and the spines of the posterior tibiæ fusco-ferruginous. Wings hyaline, faintly tinged with fuscous, a little darker at the apex; nervures black.

The recurrent nervures are interstitial with the first and second transverse cubital nervures; the second cubital cell reaches halfway from the cubital to the radial nervure; the third cubital cell is more than half as long on the radial as on the cubital nervure.

Length 15 mm., exp. 25 mm.

*Hab.* Mackay, Queensland (*Turner*).

This is allied to *P. spinolæ*, but differs in the sculpture of the median segment, in the stronger puncturès on the head and thorax, and the greater breadth between the eyes. The clypeus

is also broader. Also allied to *P. fuscipenne* Sm. from W. Australia and *P. nitidum* Sm. from Mysore, but the distance between the eyes is much greater than in either species, and the antennæ are much longer than in *fuscipenne*.

PISON INSULARE Sm. st. PRISCUM, n. st.

♀. Clypeus nearly twice as broad as long, bluntly produced in the middle of the anterior margin. Antennæ as long as the thorax and median segment combined, inserted a little further from each other than from the eyes; the second joint of the flagellum a little longer than the third, and about two and a half times as long as the first. Eyes narrowly and deeply emarginate, fully half as far again from each other at the base of the mandibles as on the vertex, the distance between them on the vertex exceeding the length of the second joint of the flagellum. The posterior ocelli as far from the eyes as from each other. Head opaque, the clypeus and the front round the base of the antennæ clothed with shining white pubescence. Thorax shining, minutely punctured. Median segment shorter than the mesonotum, almost vertically truncate posteriorly, very finely and sparsely punctured, shining, with an almost obsolete median sulcus; the face of the truncation with a deep depression at the base, finely punctured at the base, with a few indistinct transverse striæ at the apex. Abdomen shining, minutely punctured, the first segment oblique and slender at the base, much longer than the second, the second segment not depressed at the base; the apical margin of the segments feebly depressed, with a little greyish-white pubescence on the sides.

Entirely black. Wings hyaline, faintly tinted with fuscous, especially at the apex, and slightly iridescent; nervures black.

The first recurrent nervure is received close to the apex of the first cubital cell, the second is interstitial with the second transverse cubital nervure. The second cubital cell does not reach halfway from the cubital to the radial nervure; the third is about half as long on the radial as on the cubital nervure.

Length 12 mm., exp. 20 mm.

*Hab.* Mackay, Queensland (*Turner*); November.

The eyes on the vertex of typical *P. insulare*, from the New Hebrides, are nearer together than the length of the second joint of the flagellum; the clypeus is not bluntly produced in the middle of the apical margin; the median segment is less abruptly truncate posteriorly, and the median sulcus on it is well defined. The wings are also more hyaline.

These differences hardly seem of full specific importance, though quite sufficient to constitute a good geographical race.

PISON INFUMATUM, sp. n.

♀. Clypeus twice as broad as long, bluntly produced on the middle of the apical margin, thinly covered with short grey pubescence. Head opaque, with a very obscure longitudinal sulcus

on the front. Eyes deeply emarginate, separated on the vertex by a distance equal to the length of the two basal joints of the flagellum, more than half as far again from each other at the base of the mandibles; the posterior ocelli very near the eyes, nearly twice as far from each other, but much nearer to each other than to the anterior ocellus. Antennæ inserted a little nearer to each other than to the eyes; the second joint of the flagellum more than twice as long as the first and about one-third longer than the third. Pronotum not much more than half as broad as the head, steeply depressed anteriorly, the posterior margin straight. Thorax subopaque. Median segment almost smooth, very minutely punctured, with very short striæ at the base, and a very obscure median carina from the base to the apex. Abdomen very minutely punctured, the apical margin of the segments broadly depressed, the second segment not depressed at the base.

Entirely black; the tegulæ testaceous brown; the pubescence white on the inner margin of the eyes below the emargination, on the sides of the postscutellum, on the sides of the median segment near the apex, and very sparsely on the sides of the abdominal segments. Wings hyaline at the base, the apical two-thirds fusco-hyaline; nervures black.

The recurrent nervures are almost interstitial with the first and second transverse cubital nervures. The second cubital cell extends more than halfway from the cubital to the radial nervure; the third is about three times as long on the cubital as on the radial nervure.

Length 7 mm., exp. 10 mm.

*Hab.* Port Darwin (*Turner*); December.

PISON IGNAVUM, sp. n.

♀. Clypeus broadly rounded anteriorly, about twice as broad at the apex as long, clothed with shining white pubescence. Antennæ inserted about the same distance from each other as from the eyes, about twice as long as the mesonotum, thickened to the eighth joint of the flagellum; the second joint of the flagellum a little shorter than the scape, fully twice as long as the first joint of the flagellum and very slightly longer than the third. Eyes deeply emarginate, about one-third further from each other at the base of the mandibles than on the vertex, the distance between them on the vertex equal to about twice the length of the second joint of the flagellum; the posterior ocelli nearer to each other than to the anterior ocellus, a little further from each other than from the eyes, with a depressed transverse line on the vertex behind them. Head opaque, a very faint longitudinal sulcus below the anterior ocellus, the front round the base of the antennæ and the inner orbits of the eyes as high as the emargination clothed with shining white pubescence. Thorax minutely punctured; the pronotum transverse, with white pubescence; the mesonotum more than half as broad again as long. Median segment a little shorter than the mesonotum, broader at

the base than long, the sides steeply sloped, truncate posteriorly, obliquely striated, with a longitudinal median carina: the face of the truncation rather coarsely transversely striated, with a median sulcus, the sides of the segment raised, forming carinæ, a little white pubescence at the apex. Abdomen ovate, closely and minutely punctured, the second segment transversely depressed at the base; the apical margin of all the segments feebly depressed, most broadly in the middle, with interrupted bands of silvery pubescence.

Black; the spines of the tibiæ testaceous; tegulæ fuscous. Wings hyaline, faintly clouded at the apex, nervures black.

First recurrent nervure received near the apex of the first cubital cell, second at the middle of the second cubital cell. The second cubital cell reaches more than halfway from the cubital to the radial nervure; the third is extremely short on the radial nervure.

♂. Similar in all respects to the female.

Length, ♀ 9 mm., ♂ 7 mm.; exp., ♀ 14 mm., ♂ 12 mm.

*Hab.* Mackay and Cairns, Queensland (*Turner*); March. Also from Melbourne.

Near *P. westwoodi* Shuck. from Tasmania, but differs in the presence of a carina on the median segment and in the position of the recurrent nervures. I have not seen the type of *P. westwoodi*, nor any specimen quite answering to the description. The present species is also near *P. iridipennis* Sm. from Hawaii, but the antennæ are longer and the eyes further apart on the vertex, the clypeus is also different. *P. pallidipalpe* Sm., from Ceram, is a larger species, and has the clypeus very different.

#### PISON IRIDIPENNE Sm.

Described by Smith from Honolulu.

*Hab.* Mackay and Cairns, Queensland (*Turner*).

In the female the posterior ocelli almost touch the eyes, which are very close together on the vertex.

#### PISON PUNCTULATUM Kohl.

*Pison punctulatum* Kohl, Verh. zool.-bot. Ges. Wien, xxxiii. p. 336, 1883, nec Cameron.

*Hab.* Peak Downs, Queensland (*Kohl*); Mackay, Queensland (*Turner*).

#### PISON AURIVENTRE, sp. n.

♀. Clypeus very short, at least three times as broad as long, convex, clothed with golden pubescence, changing to silver at the angles. Antennæ nearer to the eyes than to each other; the second joint of the flagellum scarcely longer than the third, about twice as long as the first. Eyes shallowly and rather broadly emarginate, the depth of the emargination about equal to the length of the first joint of the flagellum; about half as far again from each other at the base of the mandibles as on the vertex.



Posterior ocelli as far from the anterior ocellus as from each other, nearly half as far again from each other as from the eyes. Head opaque, the front closely covered with golden pubescence. Pronotum about two-thirds of the breadth of the head, the posterior margin straight, the angles not rounded, covered with pale shining pubescence. Thorax opaque. Median segment as long as the mesonotum, with sparse golden pubescence, silvery on the sides, obscurely obliquely striated, with a median carina; the posterior truncation irregularly transversely striated, with a median sulcus, the sides closely and finely punctured. Abdomen ovate, very minutely and closely punctured, the sides and apical margins of the segments covered with short golden pubescence, the pubescence at the apical angles of the basal segment silvery. The first segment is subtruncate at the base, the second is the longest and broadest.

Black; the mandibles ferruginous; the spines of the tibiæ, the tarsal ungues, and the apical margin of the abdominal segments very narrowly fusco-ferruginous. Wings hyaline, iridescent, clouded with fuscous at the apex; the nervures black.

The first recurrent nervure is received by the first cubital cell very near the apex, the second is interstitial with the second transverse cubital nervure. The third cubital cell is three times as long on the cubital as on the radial nervure.

Length 8 mm.

*Hab.* Victoria (*French*).

Allied to *P. marginatum* Sm., from which it may be distinguished by the more shallow emargination of the eyes, the front is also much narrower. As in *marginatum* the two or three apical joints of the antennæ are slenderer than the preceding ones. The allied West-Australian species *tibiale* is a much stouter built insect with a much shorter median segment. The median segment is also longer than in *P. simillimum* Sm., in which species the eyes are deeply emarginate as in *P. marginatum*.

PISON VIROSUM, sp. n.

♀. Clypeus large, not more than twice as broad as long at the broadest point, narrowed towards the apex, where it is subtruncate, feebly convex, clothed with dull golden pubescence. Head and thorax opaque; the front broad, with a shallow, longitudinal, median sulcus above the base of the clypeus, not nearly reaching the anterior ocellus. Eyes separated at the base of the clypeus by a distance half as great again as that separating them on the vertex; the emargination shallow and rather broad, not equal in depth to the length of the first joint of the flagellum. Posterior ocelli a little further from each other than from the eyes, with a delicately impressed transverse line above and touching them. Antennæ as long as the thorax and median segment combined, inserted near together, twice as far from the eyes as from each other, very slightly thickened to the apex; the second joint of the flagellum as long as the scape, twice as

long as the first joint and nearly half as long again as the third. Pronotum straight, strongly depressed anteriorly, about two-thirds of the width of the head. Median segment not quite as long as the mesonotum, narrowed and almost vertically truncate posteriorly, closely obliquely striated, with a median carina from the base to the apex; the face of the truncation transversely striated, with a deep median sulcus. Abdomen very minutely punctured, the apical margin of the segments rather broadly depressed, the second segment a little longer than the first or third, the first subtruncate at the base.

Black; the front covered with fine golden pubescence, the posterior margin of the pronotum with fine silvery pubescence; the antennæ (except the apical joint), the mandibles, tegulæ, tarsi, tibiæ, the apex of the femora, and the abdomen (except the base of the first segment) ferruginous. Wings hyaline, faintly iridescent; nervures fuscous.

The first recurrent nervure is received close to the apex of the first cubital cell, the second at the middle of the second cubital cell. The third cubital cell is twice as long on the cubital as on the radial nervure, and the second cubital cell reaches a little more than halfway from the cubital to the radial nervure.

♂. The clypeus produced into a point on the middle of the apical margin, the pubescence on the front paler than in the female, and the apical abdominal segment narrowly emarginate at the apex. Otherwise as in the female.

Length, ♀ 9 mm., ♂ 7 mm.

*Hab.* Mackay, Queensland (*Turner*); September to February.

This seems to be near *P. pelletieri* Le Guillou, but is a smaller species and the sculpture of the median segment is very different. I have not seen *P. pelletieri*.

#### PISON RUFICORNE Sm.

♀. Clypeus large, not more than half as broad again as long, truncate at the apex, clothed with short silvery pubescence, very slightly convex. Head and thorax opaque, the front above the base of the antennæ and the inner margin of the eyes below the emargination clothed with silvery pubescence. Eyes more strongly convergent towards the clypeus than towards the vertex, separated on the vertex by a distance about one-third greater than the distance separating them at the base of the clypeus, the emargination narrow and exceeding in depth the length of the first joint of the flagellum by about one-half. Antennæ inserted a little nearer to the eyes than to each other; the second joint of the flagellum as long as the scape, twice as long as the first joint but only slightly longer than the third, the apical joints moderately thickened. Pronotum very short, the posterior margin straight, depressed below the level of the mesonotum, about one-quarter narrower than the head, and thinly clothed with short white pubescence. Median segment rather shorter than the mesonotum, narrowed and vertically truncate posteriorly.

rather coarsely obliquely striated, with a rather ill-defined median carina from the base to the apex; the surface of the posterior truncation transversely striated, with a deep median sulcus. Abdomen not quite as long as the thorax and median segment combined, almost smooth, the apical margin of the segments depressed, with a little fine pubescence on the sides; the first segment subtruncate at the base, the second a little longer than the first or third, transversely depressed at the base.

Black; the mandibles, palpi, antennæ (except at the extreme apex), tegulæ, tibiæ, tarsi, the apex of the femora, and the abdomen (except the basal half of the first segment and the extreme base of the second) ferruginous. Wings hyaline, nervures black.

The first recurrent nervure is received by the first cubital cell about one-fifth before the apex, the second at the middle of the second cubital cell. The second cubital cell does not reach quite halfway to the radial nervure from the cubital nervure; the third cubital cell is a little less than twice as long on the cubital as on the radial nervure.

Length 8 mm.

*Hab.* Victoria (*French*).

In another specimen the second, third, and fourth abdominal segments are strongly stained with black. The type was from the Macintyre River, Queensland, and has much more black on the abdomen. The specimen in the British Museum collection is from that locality and is probably the type, though not marked. I have taken the description from a Victorian specimen. In Queensland specimens the eyes are nearly, if not quite, as far apart on the clypeus as on the vertex. In specimens from Mackay the median segment is much more finely striated and the abdomen is brighter in colour and entirely ferruginous. These differences, although apparently constant, do not seem to me sufficient to deserve even subspecific rank; it is probable that connecting forms will be found to occur in intermediate localities.

PISON MELANOCEPHALUM, sp. n. (Plate XXVI. fig. 12.)

♀. Clypeus subtriangular, truncate at the base, convex, obliquely triangularly depressed from the centre to the apex. Head opaque, almost smooth, with a shallow longitudinal sulcus reaching from the anterior ocellus to near the base of the clypeus. Eyes deeply and narrowly emarginate, convergent towards the base of the antennæ, where they are separated by a distance about equal to the length of the scape of the antennæ, separated on the vertex by a distance nearly twice as great; the posterior ocelli nearly twice as far from each other as from the eyes. Antennæ inserted at the base of the clypeus, very close to the eyes; the scape short, about equal in length to the two basal joints of the flagellum: the second and third joints of the flagellum about equal to each other in length, each more than half as long again as the first joint, the apical joints slightly thickened. The eyes reach to the posterior margin of the head. Pronotum about two-thirds of

the width of the head, strongly depressed anteriorly. Thorax and median segment impunctate, subopaque; the median segment slender, half as long again as broad at the base, narrowed posteriorly and oblique, with a median sulcus from the base not reaching the apex. First abdominal segment slender at the base, with a longitudinal sulcus not reaching the apex, nearly as long as the second segment; the second and third segments strongly transversely depressed at the base. The tarsi are without spines.

Light ferruginous brown; the head black; the antennæ (except the two apical joints) castaneous. Wings hyaline, nervures pale ferruginous.

The second cubital cell is very small, only extending along the transverse cubital nervure for less than one-third of its length, the second recurrent nervure is received close to the base of the cell; the first cubital cell more than three times as long as the third on the cubital nervure, receiving the first recurrent nervure beyond two-thirds from the base.

Length 5 mm.

*Hab.* Cairns, Queensland (*Turner*); February.

This is closely allied to some of the species of the *Parapison* section in which the second cubital cell is wholly absent. The strong convergence of the eyes towards the base of the clypeus is remarkable.

#### PISON (PARAPISON) NOCTULUM, sp. n.

♀. Clypeus narrowly convex in the middle, nearly twice as broad as long, the apical margin very broadly rounded, clothed with very short silvery pubescence. Antennæ as long as the head, thickened towards the apex, inserted a little further from each other than from the eyes; the second joint of the flagellum twice as long as the first and half as long again as the third. Eyes rather deeply emarginate, half as far again from each other at the base of the mandibles as on the vertex, separated on the vertex by a distance about equal to the length of the two basal joints of the flagellum. Head opaque, with a delicate longitudinal sulcus below the anterior ocellus. Posterior ocelli half as far again from each other as from the eyes, and as far from each other as from the anterior ocellus. Thorax opaque, very minutely punctured; pronotum narrowed anteriorly and oblique, longer than in most of the species of the genus, the posterior margin as broad as the head and on a level with the mesonotum. Median segment shorter than the mesonotum, narrowed and truncate posteriorly, very delicately transversely striated, with a small smooth triangular mark at the apex, from the apex of the triangle a carina reaches almost to the apex of the segment; the surface of the truncation is almost smooth, with a broad median sulcus. Abdomen almost smooth, the apical margin of the segments depressed, with sparse grey pubescence on the sides; the second segment feebly transversely depressed at the base, equal in length to the third. The mesopleuræ are opaque, very minutely punctured,



with the longitudinal sulcus below the base of the wings much more feebly marked than in *P. erythrocerum* Kohl.

Black; the tegulae fuscous. Wings hyaline, faintly clouded at the apex; nervures fuscous.

Length 7 mm.

*Hab.* Mackay, Queensland (*Turner*); February.

The pronotum is shaped as in *erythrocerum* Kohl, but more strongly narrowed anteriorly, and much less depressed than in other species.

#### PISON (PARAPISON) PERTINAX, sp. n.

♀. Head and thorax opaque, not visibly punctured, a short and obscure longitudinal sulcus below the anterior ocellus. Clypeus short, fully twice as broad as long, convex, very broadly rounded anteriorly, and covered with short silvery pubescence. Antennae a little longer than the head, inserted at the base of the clypeus, nearly half as far again from each other as from the eyes; the scape short, scarcely longer than the second joint of the flagellum, which is about half as long again as the first or third; the first joint is stout and equal in length to the third. Eyes narrowly emarginate, the depth of the emargination about equal to the length of the first joint of the flagellum; the distance between the eyes on the vertex equal to about three-quarters of the distance between them at the base of the clypeus. The posterior ocelli a little nearer to the eyes than to each other, situated very near to the posterior margin of the head, which is slightly transversely raised behind them. Pronotum short and strongly depressed anteriorly, the posterior margin straight; scutellum broadly truncate at the apex. Median segment rather slender, much longer than broad, a little longer than the mesonotum, delicately obliquely striated, a carina from the base to the apex lying in a depressed sulcus, the lateral margins of the segment marked by a carina; narrowed posteriorly and abruptly truncated, the surface of the truncation transversely striated, with a deep median sulcus. Abdomen as long as the thorax and median segment combined, shining; the apical margins of the segments depressed, most broadly in the middle, the second segment constricted at the base, longer and broader than the first or third.

Black; the mandibles, antennae (except the two apical joints), tibiae, tarsi, and abdomen (except the middle of the third segment) ferruginous. Wings hyaline, iridescent; nervures black.

The first recurrent nervure is received by the first cubital cell beyond two-thirds from the base, the second at the extreme base of the second cubital cell, which is almost pointed on the radial nervure, being less than a quarter of the length of the cell on the cubital nervure.

Length 7 mm.

*Hab.* Mackay, Queensland (*Turner*); January to May.

In some specimens the abdomen is wholly ferruginous.

## PISON (PARAPISON) TENEBROSUM, sp. n.

♀. Mandibles acute at the apex; clypeus short, more than twice as broad as long, narrowly convex or subcarinate in the middle, with a small blunt tubercle just before the apex, subtruncate at the apex, clothed with short silvery pubescence. Head, thorax, and abdomen opaque; the eyes narrowly and shallowly emarginate, separated on the clypeus by a distance about one-quarter greater than that separating them on the vertex. Antennæ scarcely longer than the head, inserted a little further from each other than from the eyes, the scape as long as the first two joints of the flagellum combined; the first joint of the flagellum two-thirds of the length of the second, the second and third almost equal. Posterior ocelli twice as far from each other as from the eyes. Pronotum almost straight, transverse, about three-quarters of the breadth of the head; mesonotum with a broad, shallow, longitudinal, median depression not reaching the posterior margin. Median segment a little shorter than the mesonotum, narrowed from the base, obliquely truncate posteriorly, with a longitudinal carina from the base lying in a shallow depression and not reaching the apex, obscurely obliquely striated; the face of the truncation minutely and very closely punctured, with a deep median sulcus. The sides and apical margin of the abdominal segments with sparse grey pubescence. The first segment subtruncate at the base, nearly as long and broad as the second.

Black; the mandibles dark ferruginous; the spines of the tibiæ testaceous; the tegulae, the anterior tibiæ, and the tarsi fuscous. Wings hyaline, nervures fusco-ferruginous.

The second cubital cell is small, triangular, pointed on the radial nervure, less than one-third of the length of the first on the cubital nervure, receiving the second recurrent nervure near the base. The first cubital cell receives the first recurrent nervure beyond two-thirds from the base.

Length 5 mm., exp. 8 mm.

*Hab.* Mackay, Queensland (*Turner*); January.

## PISON (PARAPISON) CALIGINOSUM, sp. n.

♀. Mandibles short and very broad, shallowly and widely emarginate at the apex. Clypeus half as broad again as long, very feebly convex, strongly rounded at the apex. Head and thorax opaque, very minutely and closely punctured; the antennæ inserted almost as near to each other as to the eyes, the scape about equal in length to the first two joints of the flagellum, the second joint of the flagellum more than half as long again as the first and a little longer than the third. The emargination of the eyes exceeding in depth the length of the first joint of the flagellum; the eyes at the base of the clypeus nearly half as far again from each other as on the vertex. Posterior ocelli nearer to each other than to the anterior ocellus, but nearer to the eyes than to each other. Pronotum not more than two-thirds of the breadth of the

head, very short, the posterior margin straight. Median segment as long as the mesonotum, narrowed strongly and abruptly truncate posteriorly, with a median carina lying in a narrow depression not quite reaching the base of the truncation, delicately obliquely striated, punctured between the striæ; the surface of the truncation with a deep depression at the base, finely punctured at the sides, finely transversely striated near the apex. Abdomen shining, very minutely punctured, the first segment slender at the base, as long as the second, and at the apex about two-thirds of the breadth of the second; the second segment transversely depressed at the base and longer than the third.

Entirely black, with a little sparse silvery pubescence on the orbits of the eyes and the sides of the median segment and abdomen; a little fulvous pubescence on the sides of the two apical segments; the silvery pubescence very short and fine, the fulvous coarser. Wings hyaline, iridescent, faintly clouded at the extreme apex; nervures black.

The second cubital cell is very short on the radial nervure, but half as long as the first on the cubital nervure, receiving the second recurrent nervure before the middle. The first cubital cell receives the first recurrent nervure at about one-sixth from the apex.

Length 7 mm., exp. 11 mm.

*Hab.* Kuranda near Cairns, Queensland (*Turner*); February.

PISON (PARAPISON) ABERRANS, sp. n.

♂. Antennæ no longer than the head, moderately thickened to the apex, about the same distance from each other at the base as from the eyes; the second joint of the flagellum scarcely longer than the first, the scape longer than the first three joints of the flagellum combined. Clypeus nearly three times as broad at the apex as long, the apical margin almost straight, clothed with shining silvery pubescence. Head and thorax opaque; an obscure, impressed, longitudinal line on the front below the anterior ocellus; the front round the base of the antennæ and the inner orbits of the eyes below the emargination clothed with silvery pubescence. Eyes narrowly and rather shallowly emarginate, the emargination hardly equalling in depth the length of the first joint of the flagellum; the distance between the eyes at the base of the clypeus exceeding by more than one-third the distance between them on the vertex; the posterior ocelli nearly twice as far from each other as from the eyes. Pronotum strongly depressed anteriorly, the posterior margin very broadly arched. Scutellum smooth and shining, broadly truncate at the apex. Median segment longer than broad, finely obliquely striated, longitudinally depressed in the middle, with a carina in the depression, truncate posteriorly; the surface of the truncation transversely striated, with a median sulcus. Abdomen shining, microscopically punctured, the segments feebly but broadly depressed on the apical margin; the second segment transversely

depressed at the base, broader but hardly longer than the first and third.

Black; the mandibles and the tarsi ferruginous brown. Wings hyaline, iridescent; nervures black.

The first recurrent nervure is received by the first cubital cell a little before two-thirds from the base, the second at the extreme base of the second cubital cell. The second cubital cell is extremely small, almost pointed on the radial nervure, and not more than one-sixth of the length of the first cubital cell on the cubital nervure. On one side of the type specimen the second transverse cubital nervure is absent, leaving the cell open.

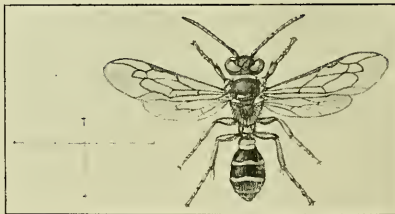
Length 4 mm.

*Hab.* Mackay, Queensland (*Turner*); January.

PISON (*AULACOPHILUS*) *DIFFICILE*, sp. n.

♀. Clypeus slightly produced and pointed in the middle of the apical margin, nearly twice as broad at the apex as long, thinly clothed with pale fulvous pubescence. Antennæ inserted just above the base of the clypeus, a little further from each other than from the eyes, as long as the thorax and median segment combined; the apical joints not at all thickened; the second joint of the flagellum longer than the third joint or than the scape. Eyes rather deeply emarginate, convergent towards the vertex, where they are separated by a distance equal to the length of the second joint of the flagellum; the posterior ocelli nearer to

Text-fig. 110.



*Pison (Aulacophilus) difficile.*

the eyes than to each other. Head opaque, about equal in breadth to the mesonotum, the front thinly clothed with short, pale, golden pubescence. Pronotum short, strongly depressed and clothed with pale golden pubescence. Thorax and median segment very delicately punctured. The median segment longer than the mesonotum, strongly narrowed and depressed to the apex, with a deep sulcus from the apex nearly reaching the middle, the sides with thin greyish pubescence. Abdomen petiolate, pubescent; the first segment twice as broad at the apex as at the base, half as long again as the second segment, the third segment



a little broader than the second; the apical margin of segments 1-4 with a band of pale golden pubescence interrupted in the middle.

Black; the mandibles at the base, the antennæ (except the two apical joints), the tegulæ, the base and apex of the first abdominal segment broadly, the apical margin of the remaining segments, the tarsi, tibiæ, and the apex of the femora rufo-testaceous. Wings hyaline, nervures dull rufo-testaceous.

The first cubital cell very long, receiving the first recurrent nervure very near the apex; the second cubital cell very short on the radial nervure, receiving the second recurrent nervure near the base, less than three times as long on the cubital as on the radial nervure.

Length 11 mm., exp. 19 mm.

*Hab.* Mackay, Queensland (*Turner*).

This species resembles the following one *P. icarioides* in shape, but the antennæ are much longer and are not thickened at the apex, and the shape of the second cubital cell is very different. It does not approach so nearly to *Aulacophilus*, forming a connecting link with true *Pison*.

PISON (*AULACOPHILUS*) ICARIOIDES, sp. n. (Plate XXVI. fig. 13.)

♀. Clypeus broadly rounded at the apex, more than twice as broad as long, clothed with rather long, shining, very pale golden pubescence. Front round the base of the antennæ, and the inner orbits of the eyes as high as the emargination, clothed with short silvery pubescence; a short, obscure, median carina above and between the base of the antennæ; the vertex opaque. Eyes rather shallowly and broadly emarginate, the distance between them at the base of the mandibles about one-third greater than on the vertex; the posterior ocelli almost as far from each other as from the eyes. Antennæ inserted a little further from each other than from the eyes, scarcely longer than the head, much thickened to the apex; the second joint of the flagellum less than twice as long as the first and one-third longer than the third. Thorax, median segment, and abdomen opaque, very minutely and closely punctured; the pronotum nearly as broad as the head, very gradually depressed anteriorly; scutellum short and transverse. The median segment rather slender, longer than the mesonotum, much narrowed and rounded to the apex, not truncate, with a median sulcus from the base to the apex. First abdominal segment slender, nearly twice as long as it is broad at the apex, about three times as broad at the apex as at the base, with a deep sulcus from the base to beyond the middle, the apical margin strongly depressed; second segment very large, nearly three times as broad at the apex as the first, strongly convex; the apical margin of all the segments depressed.

Black; the mandibles (except at the apex), the antennæ at the base, the apex of the clypeus, the tegulæ, the first segment of the abdomen, the apical margins of the other segments, the tibiæ, tarsi, and the apex of the femora dull ferruginous. The pubescence on

the posterior margin of the pronotum, the postscutellum, the apex of the median segment, the apical margin of all the abdominal segments, and the whole of the third golden yellow, short and dense. Wings very pale flavo-hyaline, slightly clouded on the costa and at the apex; nervures ferruginous.

The first recurrent nervure is received by the first cubital cell just beyond three-quarters from the base, the second by the second cubital cell close to the base. The second cubital cell is extremely short on the radial nervure, both transverse cubital nervures being strongly curved and convergent. As in *Parapison*, the true second cubital cell is obsolete.

Length 11 mm., exp. 18 mm.

*Hab.* Mackay, Queensland (*Turner*).

This species differs from *Aulacophilus vespoidea* Sm. in the shape of the first abdominal segment, which is much shorter and broader, and also in the shape of the second cubital cell and the position of the recurrent nervures. I do not consider *Aulacophilus* of more than subgeneric value. The occurrence of species in Australia is another instance of the relationship of the Hymenopterous fauna of S. America and Australia. The present species shows most relationship to *Pison* in the *auratus* group.

#### TRYPOXYLON CONNEXUM, sp. n.

♀. Clypeus broadly rounded anteriorly, broad and short, densely clothed with short silvery pubescence. Antennæ inserted very near together, nearer to each other than to the eyes; the second joint of the flagellum nearly half as long again as the third, the apical joint conical, scarcely longer than the penultimate joint. Eyes separated on the vertex by a distance about one-third greater than that separating them at the base of the clypeus; the posterior ocelli nearly twice as far from each other as from the eyes, and further from the anterior ocellus than from each other. The inner orbits of the eyes are clothed with silvery pubescence as high as the deep and narrow emargination. The anterior ocellus is surmounted by an elevated semicircular carina, which is narrowly separated from the inner margin of the eyes and reaches as low as the emargination, whence it is continued as a V-shaped carina, much elevated at the apex and almost reaching the base of the antennæ; from the apex it is continued as a very high carina between the antennæ, terminating abruptly at the base of the clypeus; the space enclosed by the carinæ is concave and opaque; the vertex subopaque, with an obscure longitudinal carina between the posterior ocelli. Pronotum on a level with the mesonotum, short and broadly, but slightly, emarginate anteriorly, the anterior margin raised and thickened. Mesonotum opaque and finely, but not very closely punctured; the mesopleuræ with sparse silvery pubescence. Median segment slender, obliquely truncate posteriorly, transversely striated, the posterior surface with a deep median sulcus; the triangular space at the base slightly convex, transversely striated, and divided by a longi-

tudinal sulcus. Abdomen shining, very minutely punctured and feebly pubescent; the first segment very slender, slightly thickened at the apex, longer than the second and third segments combined.

Black; the posterior margin of the pronotum pale testaceous; tegulae and the spines of the tibiae testaceous. Wings hyaline, nervures fusco-ferruginous.

♂. As in the female, but the apical joint of the antennae is longer and slightly curved near the apex, fully twice as long as the second joint of the flagellum.

Length, ♀ 10–12 mm., ♂ 9 mm.

*Hab.* Mackay, Queensland (*Turner*); February and March.

Very near *T. pileatum* Sm. from India, but the frontal carinae are much more strongly developed and the first abdominal segment longer; the sculpture of the median segment is also coarser.

#### TRYPOXYLON PLACIDUM Sm.

*Trypoxylon placidum* Sm. Proc. Linn. Soc., Zool. vii. p. 35. n. 1, 1863.

*Hab.* Mysole (*Smith*); Cairns, Queensland (*Turner*), April.

#### CRABRO (RHOPALUM) MILITARIS, sp. n.

♂. Clypeus small, subtriangular, without a carina, without spines on the anterior margin. Mandibles bidentate at the apex, the inner tooth the longest. Head and thorax shining, minutely punctured, the front smooth, the groove for the scape deep and very narrowly separated from the eyes. Eyes almost touching the base of the antennae, where they are separated from each other by a distance equal to half the length of the scape. The second joint of the flagellum half as long again as the first. Pronotum not more than half as wide as the head, narrowed anteriorly, the angles obtuse. Mesonotum broadly and very shallowly depressed on the middle of the anterior half, with a very obscure longitudinal carina in the depression; the scutellum divided by an obscure longitudinal carina. Mesopleurae shining, a little more strongly punctured than the mesonotum. Median segment steeply sloped posteriorly, smooth and shining; the longitudinal sulcus dividing the triangular space at the base very shallow and obscure, well-defined and deep on the posterior slope. Abdomen petiolate, longer than the head and thorax combined, and slender; the first segment very narrow and flat, swollen at the apex, longer than the second segment, which is long and gradually broadened to the apex, the fourth segment the broadest. Epipygium shining, very narrowly truncate at the apex.

Black; the scape of the antennae, the anterior and intermediate tibiae and tarsi, and the apex of the femora yellow; the apex of the first abdominal segment, the second and third (except on the apical margin), the posterior tibiae and tarsi, and the apex of the femora ferruginous. Wings hyaline iridescent, nervures black.

The recurrent nervure is received by the cubital cell at two-thirds from the base. The posterior tibiæ are much swollen towards the apex.

Length 12 mm., exp. 17 mm.

*Hab.* Victoria (*French*); Tasmania.

The specimen from Tasmania has the wings fusco-hyaline.

CRABRO (RHOPALUM) TRICOLOR Sm.

*Crabro tricolor* Sm. Cat. Hym. B. M. iv. p. 394. n. 14, 1855, ♂.

♀. Mandibles bidentate at the apex, the outer tooth very small. Clypeus convex in the middle and subcarinate, produced in the middle of the apical margin and emarginate, the angles of the emargination forming strong blunt teeth, a small tooth on each side; the whole clypeus clothed with shining silvery pubescence. Antennæ inserted close to the eyes, the distance between the eyes at their base about equal to the length of the second joint of the flagellum; the first joint of the flagellum about half as long as the third, and a little more than half as long as the second. The posterior ocelli nearer to each other than to the eyes and nearer to the anterior ocellus than to each other, with a feeble longitudinal carina between them. Head and thorax opaque, very closely and minutely punctured, the front smooth and shining, the groove for the scape occupying the entire breadth, the posterior margin of the head broadly emarginate. Pronotum short, strongly narrowed anteriorly; the mesopleuræ less opaque than the mesonotum. Median segment steeply sloped posteriorly and rounded, the space at the base opaque, very finely rugose, with a sulcus from the base to the apex and a few very short striae from the base. Abdomen petiolate, opaque, very minutely punctured; the first segment long and slender, swollen at the apex, a little longer than the second, the second and third gradually widened, the fourth the broadest; the fifth dorsal segment clothed with short, close, fulvous pubescence. The epipygium is triangular, opaque, the sides slightly raised. The posterior tibiæ strongly swollen to the apex. The recurrent nervure is received by the cubital cell just before three-quarters from the base.

Black; the scape of the antennæ, the apex of the tegulæ, the tarsi, the anterior and intermediate tibiæ, and the apex of all the femora and of the posterior coxæ yellow; the base and apex of the second abdominal segment and the base of the third ferruginous; the tarsal ungues black. Wings hyaline, faintly tinged with fuscous; nervures fuscous.

♂. As in the female.

Length, ♀ 13 mm., ♂ 11 mm.

*Hab.* Woodford, Blue Mts, N. S. Wales (*G. A. Waterhouse*); Victoria (*French*); Tasmania (*Smith*).

CRABRO (RHOPALUM) TENUIVENTRIS, sp. n.

♀. Mandibles feebly bidentate at the apex. Clypeus clothed



with shining white pubescence. truncate on the apical margin, convex at the base, with an oblique semicircular truncation at the apex, the truncation smooth and shining, without pubescence. Antennæ inserted close together, touching the eyes; the second joint of the flagellum longer than the first. Eyes just above the base of the antennæ separated by a distance about equal to the length of the second joint of the flagellum; the posterior ocelli a little further from the eyes than from each other and about the same distance from the posterior margin of the head as from each other. Head smooth and shining, the posterior margin broadly emarginate. Thorax smooth and shining, the pronotum narrowed anteriorly; the median segment rounded posteriorly, shining and very minutely punctured, with a median sulcus from the base. Abdomen elongate, shining and minutely punctured; the first segment very long and slender, of almost even thickness throughout, the second and third gradually broadened, the fourth the broadest. The recurrent nervure is received at the middle of the cubital cell, the transverse cubital at about one-third from the base of the radial cell.

Black; the mandibles and a mark on each side of the third abdominal segment rufo-testaceous; the scape of the antennæ, the apex of the tegulæ, the tubercles at the posterior angles of the prothorax, and the anterior and intermediate tibiæ and tarsi pale yellow; the four apical ventral segments testaceous. Wings hyaline, nervures black.

Length 4 mm.

*Hab.* Mackay, Queensland (*Turner*); May.

#### CRABRO (RHOPALUM) TRANSIENS, sp. n.

♂. Clypeus broadly rounded at the apex, without a carina, very feebly convex, and clothed with short silvery pubescence. Eyes separated from each other at the base of the antennæ by a distance nearly half as great again as the length of the scape; the first joint of the flagellum longer than the second, which is equal to the third. Posterior ocelli a little further from each other than from the eyes and as far from the eyes as from the posterior margin of the head. Head and thorax subopaque, microscopically punctured; the pronotum less than half as broad as the head and narrowed anteriorly, mesopleuræ minutely punctured, the groove rather shallow. Median segment smooth, rounded and steep posteriorly, with a transverse row of coarse punctures at the base and a short longitudinal sulcus at the extreme apex. Abdomen shining, microscopically punctured, petiolate; the first segment very narrow, swollen at the apex, a little longer than the second segment, the third and fourth segments the broadest. The recurrent nervure is received by the cubital cell at about three-fifths from the base.

Black; the scape of the antennæ and the posterior angles of the pronotum yellow; the first joint of the flagellum, the following four joints beneath, the mandibles, tegulæ, first joint of the

abdomen, the base of the second joint, the tibiæ, tarsi, trochanters, and femora (except at the base) ferruginous. Wings hyaline, brilliantly iridescent; nervures fusco-ferruginous.

Length 5 mm.

*Hab.* Victoria (*French*).

CRABRO (RHOPALUM) FRENCHII, sp. n.

♀. Mandibles bidentate at the apex, the teeth short and feeble. Clypeus short, slightly convex, without a carina, and clothed with short silvery pubescence. Eyes separated from each other at the base of the antennæ by a distance equal to about three-quarters of the length of the scape; the first joint of the flagellum longer than the second. Posterior ocelli as far from the eyes as from each other and a little nearer to the posterior margin of the head. Head and thorax shining, microscopically punctured; the pronotum short and transverse, about two-thirds of the width of the head, the angles not prominent. Median segment shining, with a median sulcus from the base to the apex. Abdomen petiolate, as long as the head, thorax, and median segment combined, shining; the three basal segments smooth, the fourth and fifth very closely and minutely punctured; the first segment narrow, very slightly swollen at the apex, more than twice as long as broad, about one-third shorter than the second segment; the second gradually widened to the apex; the third and fourth segments the broadest. Pygidium elongate, triangular. The posterior tibiæ are swollen towards the apex. The recurrent nervure is received close to the middle of the cubital cell.

Black; the mandibles (except at the apex), the scape of the antennæ, the posterior angles of the pronotum, the trochanters, and the anterior and intermediate tibiæ and tarsi pale yellow; the tegulæ, pygidium, and the posterior tibiæ and tarsi fusco-ferruginous. Wings hyaline, iridescent; nervures fusco-ferruginous.

Length 5 mm.

*Hab.* Victoria (*French*); November.

CRABRO (RHOPALUM) CONATOR, sp. n.

♂. Mandibles bidentate at the apex, the teeth of about equal length. Clypeus clothed with silvery pubescence, broadly rounded anteriorly, with a delicate median carina. Eyes separated from each other at the base of the antennæ by about half the length of the scape, diverging very broadly towards the vertex. Second joint of the flagellum half as long again as the first and a little longer than the third. Posterior ocelli a little further from each other than from the eyes and more than half as far again from the posterior margin of the head as from each other. Head large, subquadrate, broadly emarginate posteriorly, finely rugulose behind the ocelli, rugose in front of the ocelli, with very thin erect pubescence. Pronotum short, broadly and shallowly emarginate anteriorly, the anterior angles slightly produced, narrower than the head. Mesonotum shallowly punctured; mesopleuræ

opaque, almost smooth, the groove narrow and punctured. The enclosed space at the base of the median segment coarsely longitudinally rugose, the sides and apex of the segment obliquely striate-rugose. Abdomen opaque, petiolate; the first segment very slender, twice as long as the second, a little swollen at the apex, the second segment nearly as broad as the third.

Black; the scape of the antennæ, a spot on each side of the apex of the first abdominal segment, a broad band across each of the remaining segments and the whole of the seventh, the tibiæ, tarsi, and the apex of the femora ochraceous yellow. Wings hyaline, iridescent; nervures fusco-ferruginous.

The recurrent nervure is received by the cubital cell beyond two-thirds from the base.

Length 7 mm.

*Hab.* Cooktown, Queensland (*Turner*); November.

CRABRO (RHOPALUM) IDONEUS, sp. n.

♀. Head and thorax opaque, very delicately punctured-rugose; mandibles bidentate at the apex, the teeth short, the inner tooth the longest; maxillary palpi five-jointed, labial palpi three-jointed. Clypeus transverse, slightly produced in the middle of the anterior margin. Front concave, the antennæ inserted nearer to the eyes than to each other. Pronotum transverse, rounded at the angles; mesonotum with a depression from the middle of the anterior margin to the centre; the scutellum half as long as broad. Median segment very short, rounded, and truncate posteriorly; the space at the base longitudinally striated at the base, almost smooth and opaque at the apex, with a median carina extending on to the surface of the truncation to the apex. Abdomen petiolate, very minutely punctured; the petiole about half as broad as long, of even length throughout, nearly as long as the second segment, which is slightly narrower than the third. Epipygium deeply punctured, lanceolate.

Black; the clypeus, cheeks, the truncation of the median segment, and the fourth and fifth abdominal segments clothed with pale golden pubescence; the mandibles fusco-ferruginous; the flagellum (except the basal joint), the tegulæ, the first abdominal segment, the pygidium, the apical margins of the other abdominal segments, the posterior tibiæ and tarsi, and the posterior femora above ferruginous; the scape of the antennæ, the basal joint of the flagellum, the pronotum very narrowly interrupted in the middle and on the sides, the scutellum (except the apical margin), a transverse line on the postscutellum, the anterior and intermediate legs, and the posterior tibiæ beneath yellow. Wings hyaline, iridescent, clouded in the radial cell; nervures ferruginous.

The recurrent nervure is received by the cubital cell at three-fifths from the base. The radial cell is very broadly truncate at the apex, the radial nervure indistinctly produced beyond the cell. The eyes are separated at the base of the antennæ by a distance equal to about three-quarters of the length of the scape; the

first two joints of the flagellum are about equal in length. The posterior ocelli are a little further from the eyes than from each other and a little further from the posterior margin of the head than from the eyes.

♂. As in the female, but more slender; the head and thorax shining, almost smooth; the second abdominal segment narrow, about one-third longer than the first, very little more than half as wide at the apex as the third segment; the fourth segment the widest; the posterior tibiæ more dilated than in the female; the scutellum wholly black, the second abdominal segment ferruginous with a large black spot in the middle. The eyes are only separated at the base of the antennæ by about half of the length of the scape and diverge towards the vertex less strongly than in the female.

Length. ♂ 6 mm., ♀ 7 mm.

*Hab.* Mackay, Queensland (*Turner*); May.

CRABRO (RHOPALUM) AGILIS Sm.

*Crabro (Rhopalum) agilis* Sm. Proc. Linn. Soc., Zool. iii. p. 18, 1858, ♀.

*Hab.* Celebes (*Wallace*); Mackay, Queensland (*Turner*).

CRABRO PROSOPOIDES, sp. n.

♀. Clypeus slightly produced, with a median carina from the base not reaching the apex, clothed with silvery pubescence. Eyes separated at the base of the antennæ by a distance scarcely exceeding one-quarter of the length of the scape; the first joint of the flagellum fully as long as the second. Mandibles bidentate at the apex, the teeth short; maxillary palpi six-jointed, labial palpi four-jointed. The posterior ocelli about one-third further from each other than from the eyes and about as far from the posterior margin of the head as from each other. Head very closely and finely punctured, the front smooth and concave. Pronotum transverse and linear, the angles not prominent; mesonotum finely and closely punctured, the groove on the mesopleuræ well marked. Median segment steeply, but not vertically, sloped posteriorly, the triangular space at the base smooth and shining, with a shallow median sulcus, and a transverse row of deep punctures at the extreme base; the posterior slope with a large, deep depression at the base, very delicately and closely transversely striated. Abdomen very finely and closely punctured, the first segment one-third longer than the second, very narrow at the base, the apex half as wide as that of the second segment, the second segment narrower than the third, the second and third segments moderately constricted at the base, the apical segment triangular. The recurrent nervure is received at the middle of the cubital cell.

Black; the scape of the antennæ, pronotum, tegulæ, scutellum, postscutellum, tibiæ, tarsi, and the apex of the femora yellow; the flagellum light ferruginous. Wings hyaline, nervures fuscous.



♂. As in the ♀. The apical segment of the abdomen is rounded.

Length, ♀ 8 mm., ♂ 6 mm.

*Hab.* Mackay, Queensland (*Turner*); March to May. Townsville, Queensland (*Dodd*).

*CRABRO PERLUCIDUS*, sp. n. (Plate XXVI. fig. 15.)

♀. Mandibles bidentate at the apex, the inner tooth a little the longest. Clypeus strongly convex at the base, clothed with silvery pubescence, with an obliquely depressed smooth truncation to the middle of the apical margin. Antennæ inserted nearly twice as far from each other as from the eyes, the first joint of the flagellum longer than the second; the eyes separated from each other at the base of the antennæ by a distance exceeding half the length of the scape. Posterior ocelli a little nearer to each other than to the eyes, half as far again from the posterior margin of the head as from each other. Head and thorax smooth and shining; the pronotum slightly depressed, rounded at the anterior angles; scutellum very finely punctured. Median segment very short, steeply sloped posteriorly, the enclosed space at the base irregularly obliquely striated, with a depressed, transverse, coarsely punctured sulcus at the base; a median sulcus from the base to the apex. Abdomen shining, very minutely punctured, nearly as long as the head and thorax united; the first segment as long as the second, twice as broad at the apex as at the base and half as broad as the apex of the second segment. Pygidium elongate triangular.

Black; the scape of the antennæ and the anterior and intermediate legs yellow, the intermediate legs stained with ferruginous; the flagellum, posterior legs, and abdomen bright ferruginous; the tegulæ testaceous. Wings hyaline, nervures black.

The cubital cell receives the recurrent nervure at two-thirds from the base; the radial cell receives the transverse cubital nervure before the middle.

Length 7 mm., exp. 10 mm.

*Hab.* Mackay, Queensland (*Turner*); May.

*CRABRO DODDII*, sp. n.

♀. Clypeus a little produced and truncate at the apex, with a median carina, clothed with silvery pubescence. Antennæ inserted twice as far from each other as from the eyes; the second joint of the flagellum small, shorter than the first. Eyes separated from each other at the base of the antennæ by a distance equal to two-thirds of the length of the scape, strongly divergent towards the vertex. Posterior ocelli a little further from each other than from the eyes, but nearer to each other than to the posterior margin of the head. Head finely punctured-rugose; the front opaque, with sparse silvery pubescence. Thorax rugose, the pronotum transverse, almost as broad as the head, the anterior angles prominent. Mesopleuræ without a groove for the femora. The enclosed space

at the base of the median segment coarsely rugose with a deep median sulcus. Abdomen short, not petiolate; the first segment subtruncate at the base, depressed on the apical margin, the second segment the longest. All the segments opaque, very closely and finely punctured. The recurrent nervure is received near the apex of the cubital cell.

Black; the mandibles (except at the apex), the scape of the antennæ, the anterior and posterior angles of the pronotum, the postscutellum, the tibiæ, and the apex of the femora yellow; the flagellum, the tegulæ, the base of the femora, the tarsi, and the abdomen light ferruginous, the first abdominal segment with an obscure yellow band at the apex. Wings hyaline, nervures fusco-ferruginous.

♂. As in the female, but the pronotum is entirely yellow and the postscutellum black.

Length, ♀ 8 mm., ♂ 6 mm.

*Hab.* Townsville, Queensland (*Dodd*); February.

*CRABRO HEBETESCENS*, sp. n.

♀. Mandibles tridentate at the apex, the inner tooth the shortest, a strong acute tooth just before the middle of the inner margin. Maxillary palpi six-jointed, labial palpi four-jointed. Clypeus clothed with shining white pubescence, with a carina from the base to the apex, truncate at the apex, with two short teeth on each side. Head large, finely and closely punctured, the cheeks clothed with silvery pubescence. Antennæ inserted very close to the eyes, the second joint of the flagellum about half as long again as the first or third. Eyes at the base of the antennæ separated by a distance about equal to the length of the two basal joints of the flagellum; front very narrow, the groove for the scape reaching the eyes; the facets of the eyes larger near the base of the antennæ than elsewhere. Posterior ocelli very far apart, as far from the eyes as from each other, but nearer to each other than to the posterior margin of the head, which is straight. Pronotum more than two-thirds of the breadth of the head, very short and transverse, the anterior margin raised. Thorax punctured, the mesopleuræ strongly grooved for the anterior femora. Median segment short, subtruncate posteriorly, the enclosed space at the base very broadly rounded and rugose; the face of the truncation finely transversely striated, with a delicate longitudinal carina. Abdomen ovate, shining and finely punctured, the apical segment lanceolate.

Black; the mandibles at the base, the scape of the antennæ, the anterior margin of the pronotum, interrupted narrowly in the middle, the tubercles at the posterior angles of the pronotum, a small spot on each side at the base of the scutellum, a spot on each side of abdominal segments 1-5, the tibiæ above, and the basal joint of the tarsi creamy white. Wings hyaline, nervures black, the tegulæ fuscous. The recurrent nervure is received by the cubital cell at about three-quarters from the base, the cubital

nervure is sharply bent at the point of junction, the apical portion appearing almost more like a part of the transverse cubital than of the cubital nervure.

Length 9 mm.

*Hab.* Mackay, Queensland (*Turner*); January.

*CRABRO CINCTUS*, sp. n. (Plate XXVI. fig. 14.)

♀. Head very large, almost square, slightly rounded at the posterior angles, extremely finely and closely punctured. Mandibles broad at the apex and tridentate, the inner tooth very short, the middle tooth the longest. Clypeus slightly porrected, almost vertically truncate at the extreme apex, the surface of the truncation semicircular and slightly concave. Cheeks depressed along the outer orbits of the eyes, the margins of the face and the depressions on the cheeks clothed with short silvery pubescence. A longitudinal sulcus below the anterior ocellus and a longitudinal carina above it, a shallow depression on each side of the carina behind the posterior ocelli, the front clothed with short golden pubescence, the inner orbits of the eyes slightly depressed. Thorax narrower than the head; the anterior and posterior margins of the pronotum raised and with the angles slightly prominent, a deep transverse sulcus interrupted in the middle separating the raised margins. Mesonotum and scutellum very finely and closely punctured, the disc of the mesonotum with a broad and shallow depression. Median segment short, truncate posteriorly, with a deep, longitudinal, median sulcus from the base to the apex; the enclosed space at the base closely punctured with a few very short striæ at the base, broadly rounded at the apex. Abdomen subpetiolate, coriaceous, pygidium narrow and lanceolate.

Black; the mandibles at the base testaceous yellow; the clypeus, the scape of the antennæ, the two basal joints of the flagellum, and a spot on each side at the anterior angles of the mesonotum yellow; the pronotum, a large mark on the scutellum, the post-scutellum, a spot on the mesopleuræ, a short longitudinal line on the middle of the basal abdominal segment, a broad transverse band at the base of the second segment, and the three apical segments above orange; the tegulæ and the apical ventral segment of the abdomen ferruginous brown. Legs yellow, stained with ferruginous brown. Wings hyaline, tinged with fuscous; nervures dark fuscous.

Length 12 mm.

*Hab.* Mackay, Queensland (*Turner*); April.

The posterior ocelli are two and a half times as far from the posterior margin of the head as from each other; further from each other than from the eyes. The antennæ are inserted close to the eyes, the second joint of the flagellum nearly twice as long as the first and as long as the third; the distance between the eyes at the base of the antennæ equal to half the length of the scape. The mesopleuræ are rugose, the depression for the femora

not developed. The recurrent nervure is received by the cubital cell beyond three-quarters from the base; the radial nervure is not continued beyond the end of the radial cell.

*CRABRO MACKAYENSIS*, sp. n.

♀. Mandibles tridentate at the apex, the inner tooth much the shortest, the central tooth longer than the outer one. Clypeus slightly advanced, truncate at the apex, with a longitudinal carina from the base, clothed with short silvery pubescence. The pubescence on the cheeks pale golden. Head finely and very closely punctured; eyes very large, the front between them narrow and concave; a very shallowly depressed, longitudinal, and almost smooth mark on the inner margin of the eye near the summit; a short longitudinal sulcus below the anterior ocellus and another on the vertex almost reaching the anterior ocellus; the posterior ocelli as far from each other as from the eyes. Pronotum very short, transverse, raised and thickened, not prominent at the angles; mesonotum finely rugose. Median segment short, the space at the base enclosed by carinae, longitudinally striated, with an obscure median carina, broadly rounded at the apex; the posterior truncation very obscurely transversely striated, with a median sulcus. Abdomen subovate, very minutely and closely punctured; the first segment narrow at the base, the apex about two-thirds of the breadth of the second segment, only a little longer than the second segment; the apex of the fifth segment clothed with pale golden pubescence; the apical segment lanceolate, smooth and recurved at the sides, with a tuft of long golden pubescence on each side.

Black; the mandibles (except at the apex), the scape of the antennae, the pronotum (very narrowly interrupted in the middle and more broadly on the sides), a spot on each side near the base of the scutellum, a transverse line on the postscutellum, a spot near the middle of the enclosed space on the median segment, a broad transverse band near the apex of the first abdominal segment, a small spot on the sides of the second and fourth segments, and a transverse band narrowly interrupted in the middle on the fifth segment, yellow; the four basal joints of the flagellum, the tegulae, the apical margins of the abdominal segments, the tibiae, tarsi, and extreme apex of the femora and coxae ferruginous brown. Wings pale flavo-hyaline, nervures pale ferruginous.

Length 10 mm., exp. 17 mm.

*Hab.* Mackay, Queensland (*Turner*); April.

The second joint of the flagellum is about one-third longer than either the first or third, and nearly equal in length to two-thirds of the distance between the eyes at the base of the antennae.

*CRABRO ORDINARIUS*, sp. n.

♀. Mandibles bidentate at the apex, the teeth long and of about equal length. Clypeus densely clothed with silvery pubescence, with a carina from the base to beyond the centre, with a



smooth and shining, oblique, triangular truncation at the apex. Head and thorax very closely and finely punctured, the front and cheeks clothed with pale golden pubescence; the posterior ocelli far apart, further from each other than from the eyes. The anterior margin of the pronotum raised, with a transverse groove behind it on the sides. A faint and broad depression from the anterior margin of the mesonotum to the middle; the scutellum faintly depressed in the middle. Median segment short, truncate posteriorly, the enclosed space at the base broadly rounded at the apex, obliquely striate rugose, with a very broad median sulcus in which lie several transverse striæ; the face of the truncation pubescent, very finely rugose, with a strong median sulcus. Abdomen very closely and minutely punctured, not petiolate, the apical segment lanceolate.

Black; a spot at the base of the mandibles, the scape of the antennæ, the first joint of the flagellum, the anterior margin of the pronotum narrowly interrupted, the posterior angles of the pronotum, a spot on each side at the basal angles of the scutellum, a transverse line on the postscutellum, a trilobed mark at the base of the first abdominal segment, a transverse band at the base of the third and fourth segments, a line on the anterior tibiæ, and a spot near the apex of the posterior tibiæ, yellow; the tegulæ and the legs (except the coxæ) ferruginous. Wings hyaline, nervures ferruginous.

♂. As in the female, but without the yellow mark on the first abdominal segment, and there is a dull yellow transverse band on each side of the fifth and sixth segments.

Length, ♀ 9-11 mm., ♂ 9 mm.; exp., ♂ 12 mm., ♀ 17 mm.

*Hab.* Mackay, Queensland (*Turner*); February-May.

The second joint of the flagellum is longer than the third in both sexes and more than twice as long as the first. The eyes are separated at the base of the antennæ by a distance rather exceeding one-third of the length of the scape in the female and by a little less in the male. The groove on the mesopleuræ is not well-developed.

#### CRABRO CONGLOBATUS, sp. n.

♀. Mandibles broad and bidentate at the apex, the teeth of about equal length. Clypeus small, advanced in the middle, strongly emarginate at the sides, slightly convex, without a carina, and clothed with pale shining pubescence. Eyes separated at the base of the antennæ by a space equal to one-third of the length of the scape; the second joint of the flagellum about three times as long as the first and half as long again as the third. Posterior ocelli a little nearer to each other than to the eyes, and more than half as far again from the posterior margin of the head as from each other. Head and thorax very closely and finely punctured; the cheeks clothed with very pale golden pubescence. Pronotum narrower than the head, transverse, the angles not prominent; mesopleuræ smooth and shining, with a well-marked groove.

Mesonotum half as broad again as long, with a broad shallow depression from the anterior margin to the centre, in the depression is a very delicate longitudinal carina. Median segment very short, the posterior slope vertical, the space at the base coarsely obliquely striated, with a median sulcus; the posterior surface transversely rugose, with a deep median sulcus. Abdomen subovate, shining, very minutely punctured; the first segment about one-third longer than the second, very narrow at the base, rather more than half as wide at the apex as the apex of the second segment, the apical segment lanceolate. The radial nervure is received not far from the apex of the cubital cell.

Black; the scape of the antennæ, pronotum very narrowly interrupted in the middle, the scutellum (except at the base), a transverse line on the postscutellum and a transverse band on each side of abdominal segments 2-4, least broadly separated in the middle on the second segment, yellow; the tegulæ, legs, mandibles, and the apical margins of ventral segments 2-5 ferruginous. Wings fusco-hyaline, nervures black. A small spot on the mesopleuræ below the anterior wings yellow.

♂. As in the ♀, but the distance between the eyes at the base of the antennæ is equal to half the length of the scape, the median segment is more coarsely striated and the apical abdominal segment is rounded; the yellow spot on the mesopleuræ is absent.

Length, ♂ 9 mm., exp. 14 mm.; ♀ 10 mm., exp. 17 mm.

*Hab.* Mackay, Queensland (*Turner*); April and May.

Nearly allied to *C. palitans* Bingh. from India.

#### CRABRO BIVITTATUS, sp. n.

♀. Mandibles bidentate at the apex. Clypeus small, clothed with silvery pubescence, with a median carina, slightly porrect at the apex, with a minute tooth on the apical margin on each side of the carina. Head subquadrate, slightly emarginate posteriorly, very finely and closely punctured, the front smooth in the middle, clothed with silvery pubescence on the sides. The posterior ocelli further from each other than from the eyes and at least one-half further from the posterior margin of the head than from each other. Pronotum narrowed anteriorly, the anterior margin straight and a little raised with a slight groove behind it; the mesonotum slightly depressed in the middle anteriorly, minutely punctured. Median segment steeply sloped posteriorly; the space at the base divided by a very broad median sulcus in which are a few transverse striæ, with short longitudinal striæ at the base, the apex finely punctured; the posterior slope of the segment transversely and very finely striated, with a median sulcus. Abdomen very closely and minutely punctured. The recurrent nervure is received a little before the apex of the cubital cell.

Black; the scape of the antennæ yellow; the anterior margin of the pronotum narrowly interrupted, a broad transverse band at

the base of the second and fourth abdominal segments and a narrow band on each side of the fifth segment, orange; the tibiae, tarsi, and the apex of the femora dark ferruginous, the tegulae rufo-testaceous. Wings hyaline, tinted with fuscous; nervures black.

Length 9 mm.

*Hab.* Victoria (*French*).

Type in British Museum.

The eyes are separated at the base of the antennæ by a distance equal to about one-third of the length of the scape, the second joint of the flagellum is nearly three times as long as the first and fully half as long again as the third. The first abdominal segment is narrowed to the base.

#### EXPLANATION OF PLATE XXVI.

Fig.		Fig.	
1.	<i>Harpactophilus arator</i> , sp. n., p. 461.	9.	<i>Nysson (Acanthostethus) punctatissimus</i> , sp. n., p. 505.
2.	<i>Harpactophilus tricolor</i> , sp. n., p. 462.	10.	<i>Gorytes sanguinolentus</i> , sp. n., p. 497.
3.	<i>Ammophila aurifera</i> , sp. n., p. 464.	11.	<i>Gorytes lucidulus</i> , sp. n., p. 498.
4.	<i>Pseulus interstitialis</i> Cam., p. 463.	12.	<i>Pison melanocephalum</i> , sp. n., p. 515.
5.	<i>Cerceris inexpectata</i> , sp. n., p. 469.	13.	<i>Pison (Aulacophilus) icarioides</i> , sp. n., p. 521.
6.	<i>Tachytes formosissimus</i> , sp. n., p. 482.	14.	<i>Crabro cinctus</i> , sp. n., p. 531.
7.	<i>Notogonia regina</i> , sp. n., p. 475.	15.	<i>Crabro perlucidus</i> , sp. n., p. 529.
8.	<i>Zoyphium rufonigrum</i> , sp. n., p. 494.		

May 26, 1908.

Prof. E. A. MINCHIN, M.A., Vice-President,  
in the Chair.

The following papers were read:—

1. The Rudd Exploration of S. Africa.—X. List of Mammals collected by Mr. Grant near Tette, Zambesia. By OLDFIELD THOMAS, F.R.S., F.Z.S., and R. C. WROUGHTON, F.Z.S.

[Received April 14, 1908.]

We now come to the final collection of the Rudd Exploration, for after making it Mr. Grant had a severe attack of fever, and by arrangement with Mr. Rudd he has now come home, so that this magnificent exploration, which has been going on for the last five years, thus comes to an end.

Further details of the papers written on the different collections are appended to the present account, but we may here say that